

# PULP & PAPER

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The Production and Management Journal Covering  
North America's Wood Pulp, Paper, Paperboard  
and Cellulose Industries

by MILLER FREEMAN PUBLICATIONS, INC.

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## Presents Its— 1949 NORTH AMERICAN REVIEW NUMBER

For Comment on Our COVER DRAWING see below; also pages 50 and 52

### WORLD TRENDS

Pulp Consumption, Production

### GENERAL INFORMATION

U. S. and Canadian Industry

### FORECASTS

Opinions of Leaders

### STREAM IMPROVEMENT

Also Other Research

50

### EXPANSION

U. S., Canada, Mexico

60

### PULP

U. S., Canada, Europe

100

53

### PAYROLLS

Labor in U. S., Canada

65

### FIBERBOARD

Paperboard, Building Board

118

55

### PAPER

U. S., Canadian Statistics

70

### NEWSPRINT

World, U. S., Canada

126

57

### PULPWOOD

Worldwide; U. S., Canada

78

### FINANCIAL

U. S., Canadian Companies

142

### NON-PAPER USES OF CELLULOSE

General

158

Rayon

164

Plastics

172

## Thoughts Inspired by Our Cover Art

There are about 2½ million human beings on this globe and Mr. Average Man in that mighty multitude uses about 31 lbs. of wood pulp products per year.

If you consider that this is less than ¼ of the 251 lbs. used each year by Mr. Average Man among the 141,000,000 residents of the United States, you get an idea of the fantastic possibilities lying ahead for worldwide growth of this industry.

Just think what a devouring demand would be created for pulp and paper if the civilization standards of all of the more than two billion people living outside the U. S. were brought to the level in this country—as measured by consumption of wood pulp and its products!

These new and most recent figures on worldwide consumption of wood pulp and pulp products, issued in 1949 by the Food and Agriculture Organization of the United Nations, are for the year 1947.

It is important to note that they represent only the consumption of wood pulp and its products—they do not represent products made from waste paper, such as paperboard or from other fibers. They do represent all wood pulp used in paper, paperboard, fiberboard, rayon and plastics.

### Our Cover Dramatizes Potentialities

The tremendous future potentialities implied in these figures seemed so important that PULP & PAPER'S artist, A. J. Stahmer, Jr., was assigned to dramatize them in the cover drawing of this 1949 North American Review Number.

Here lies the greatest conceivable challenge for the scientific conservation and husbandry of the world's forest resources. Aside from almost insignificant exceptions, only the forests of a comparatively few Northern Hemisphere nations have thus far been found of practical use in meeting these demands.

Wood pulp is still the most plentiful, most reproductive and most practical raw material for paper. As far ahead as the

chemists can see today, it will be so for a long time to come. It produces more cellulose in a given area than other plants.

But at the 115th National Meeting of the American Chemical Society, held this spring in San Francisco, some of the very advanced work done at the University of California in studying the mechanism of photo-synthesis (the process by which plants fix carbon dioxide from air) was presented. We thus venture very close to a thought that has been in scientific minds for some time—that science might some day find a way to control this process and, in effect, that cellulose and paper could be made from the air we breathe?

### Do We Eat or Have Paper?

And while our thoughts are on such things, it is conceivable that the rapidly increasing population of the world might bring about a very grave problem—whether we eat or have paper? Whether the arable lands of the world—which have limitations no matter how many dams are built—are to be used to raise food or trees. The world has less than 4½ billion acres of coniferous forests, principal material for pulp and paper. Much of this is inaccessible.

Consider our cover drawing and the possibilities for increased paper and pulp products consumption if just the gift of literacy alone were brought to the scores of millions of humans who now can neither read nor write.

Necessity is the mother of invention. If there is created such a demand for paper as is suggested here, means will be found to make it.

And despite any experiences of the recent or the dim past, it doesn't seem possible that mankind can advance the consumption of pulp and paper as rapidly in war as it might in peace.

More about per capita consumption will be found on the next page. Figures suggest the future ahead more forcefully than mere words.

# PER CAPITA CONSUMPTION

## WORLD-WIDE TRENDS

New figures issued by the Food and Agriculture Organization of the United Nations just before this 1949 Review Number went to press estimate the per capita consumption of wood pulp in the world is 30.87 lbs. for each of the world's 2½ billion population.

Per capita consumption ranges by countries from 251½ lbs. in the United States,

196½ lbs. in Sweden and 175 1/5 lbs. in Canada to less than 2 lbs. in China. Now a politically divided nation of 456 millions, China has almost three times the population of those three leaders—just a hint of how rich a market lies in that ancient country. Many other countries such as Honduras, the Dominican Republic, Southern Korea, Belgian Congo, French

Africa, etc., are also in the "less than 2-lbs.-per-person" category.

These figures, in an electrifying way, emphasize the tremendously increased demand for pulp which can be created if the consumption in the vast backward areas of the world is increased ever so slightly.

Our cover drawing dramatizes the vast inequalities in the world in literacy and civilization as they exist today. They would seem to suggest that pulp, which is now a world commodity in every sense of that word, and the paper industry are barely on the threshold of a potential future that would make present conditions in most of the world seem, in comparison, like another Dark Age.

This marks the first time that new figures on per capita consumption in the world have been published since PULP & PAPER'S Jan., 1945, issue which was featured by the "Housley Report on Postwar Paper and Paperboard Demand" (in which Clifton W. Housley, then of the WPB and formerly of the State Department in Washington, forecast a 20,000,000-ton paper output in the U. S. two years after V-E Day. It reached 21,101,000 in 1947 and 22,062,000 last year).

The chart used with his report was on per capita paper consumption for the year 1937, based on a statistical summary of the American Paper & Pulp Association.

The new reckoning of the FAO for 1947—ten years later—is for per capita consumption of wood pulp and pulp products reckoned in wood pulp equivalents—not paper. Paper in the larger sense, of course embraces the paperboard made of waste paper and paper made of other fibers. The new FAO figures embrace all wood pulp which goes into paper, rayon, plastics, some paperboard and, in addition, fiberboards for building or insulation.

With this background information it is interesting to compare these new figures with the old:

	Consumption Per Capita in Pounds	1947	1937
	Wood Pulp & All Pulp Products Paper		
United States	251½	248*	
United Kingdom	57½	153	
Russia	?	12	
Germany	?	103	
Sweden	196½	149	
France	42	36	
Belgium	80	85	
Italy	17½	26	
Japan	8½	23	
India	Under 2 ('46)	8	
China	Under 2 ('46)	1	
Mexico	17½ ('46)	7	

\*U. S. per capita paper consumption reached 305 lbs. in 1941 and 357 lbs. in 1948.

When the 1937 data was published, it

### 1947 PER CAPITA CONSUMPTION OF WOOD PULP PRODUCTS

Country	Population	Lbs. per Capita
United States	141,000,000	251.37
Canada	12,300,000	174.195
Australia	7,470,000	110.25
New Zealand	1,760,000	114.66
<b>LATIN AMERICA</b>		
Cuba	5,010,000	30.87
Dominican Republic	2,090,000	less than 2
El Salvador	2,000,000	2.20
Honduras	1,220,000	less than 2
Mexico	22,800,000	17.6 (in '46)
Netherland West Indies	144,000	15.435
Peru	7,790,000	4.41 (in '46)
Surinam	178,000	less than 2
<b>EUROPE</b>		
Austria	7,010,000	22.05
Belgium	8,370,000	79.38
Denmark	4,100,000	88.20
Finland	3,850,000	132.3
France	40,700,000	41.89
Greece	7,400,000	6.61
Ireland	2,950,000	44.1
Italy	45,500,000	17.64
Netherlands	9,420,000	81.585
Norway	3,110,000	127.69
Poland	23,900,000	4.41 (in '46)
Sweden	6,720,000	196.245
Switzerland	4,470,000	68.35
United Kingdom	49,300,000	57.33
<b>NEAR EAST &amp; AFRICA</b>		
Egypt	18,800,000	4.41 (in '46)
Tangier	105,000	less than 2 (in '46)
Tunisia	3,230,000	4.41
Turkey	19,000,000	2.20
Belgian Congo	10,600,000	less than 2
French Cameroons	2,820,000	less than 2
French Africa	20,180,000	less than 2 (in '46)
Equatorial West	3,980,000	
Madagascar	16,200,000	
Nyasaland	4,400,000	less than 2 (in '46)
	2,230,000	less than 2
<b>ASIA</b>		
Burma	17,000,000	less than 2
Ceylon	6,700,000	4.41
China	456,000,000	less than 2 (in '46)
Indochina	25,000,000	less than 2 (in '46)
Indonesia	75,300,000	less than 2
Japan	81,000,000	8.82
Korea (Southern)	18,400,000	less than 2
Philippines	19,100,000	4.41 (in '46)

# WORLD-WIDE WOOD PULP STATISTICS for 1947 and 1948

This data is result of surveys by Canadian Pulp & Paper Assn. and U. S. Pulp Producers Assn. It is incomplete because no information was available from Russia, Russian Zone of Germany, and Russian satellites—Bulgaria, Hungary, Poland, Rumania and Yugoslavia. Therefore, under "European-Eastern" there is no breakdown as these figures represent only negotiable amounts obtained from Greece and Turkey. "NA" means not available.

## SUMMARY - TOTAL CHEMICAL WOOD PULP BY COUNTRIES

(In 000's of tons of 2000 pounds, air dry weight)

	1947			1947		1948		
	Capacity	Production	Consumption	Imports	Exports	Capacity	Production	Consumption
<b>AMERICA</b>	<b>12,618</b>	<b>12,022</b>	<b>12,514</b>	<b>2,306</b>	<b>1,529</b>	<b>13,729</b>	<b>13,115</b>	<b>13,562</b>
North	<u>12,505</u>	<u>11,961</u>	<u>12,204</u>	<u>2,045</u>	<u>1,522</u>	<u>13,597</u>	<u>13,032</u>	<u>13,190</u>
Canada	2,928	2,775	1,451	27	1,346	3,070	3,029	1,514
Newfoundland	140	99	56	0	46	150	108	56
United States	9,437	9,087	10,717	2,018	130	10,377	9,895	11,620
Latin	<u>113</u>	<u>61</u>	<u>310</u>	<u>261</u>	<u>7</u>	<u>132</u>	<u>85</u>	<u>372</u>
Argentina	3	3	64	67	0	5	5	64
Brazil	55	22	127	104	0	58	28	147
Chile	0	0	21	27	0	0	0	27
Columbia	0	0	5	3	0	0	0	6
Cuba	0	0	24	17	0	0	0	28
Mexico	55	36	71	43	7	71	52	100
<b>EUROPE</b>	<b>7,063</b>	<b>4,668</b>	<b>3,682</b>	<b>1,659</b>	<b>2,604</b>	<b>7,058</b>	<b>5,087</b>	<b>3,950</b>
Northern	<u>5,353</u>	<u>3,818</u>	<u>1,365</u>	<u>38</u>	<u>2,544</u>	<u>5,327</u>	<u>4,023</u>	<u>1,411</u>
Finland	1,616	1,052	329	0	705	1,616	1,146	551
Norway	684	558	286	38	112	684	425	290
Sweden	3,053	2,406	750	0	1,727	3,027	2,452	790
Eastern	<u>15</u>	<u>7</u>	<u>19</u>	<u>14</u>	<u>0</u>	<u>15</u>	<u>7</u>	<u>20</u>
Western	<u>335</u>	<u>211</u>	<u>1,461</u>	<u>1,310</u>	<u>0</u>	<u>355</u>	<u>254</u>	<u>1,455</u>
Belgium	35	27	152	137	0	35	31	162
Denmark	0	0	55	58	0	0	0	54
Eire	0	0	11	17	0	0	0	14
France	194	155	557	284	0	214	189	408
Great Britain	17	5	721	675	0	17	6	645
Netherlands	66	28	137	109	0	66	28	140
Spain	23	0	30	30	0	23	0	30
Central	<u>1,360</u>	<u>632</u>	<u>837</u>	<u>297</u>	<u>60</u>	<u>1,361</u>	<u>805</u>	<u>1,046</u>
Austria	524	72	64	0	7	524	160	121
Czechoslovakia	352	259	195	2	46	352	266	202
Germany - Russian Zone	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Germany - Other Zones	531	168	200	36	5	532	234	318
Italy	70	50	235	195	0	70	60	245
Switzerland	83	85	143	64	2	83	83	160
<b>SOUTH AFRICA, Union of</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>=</b>	<b>0</b>	<b>17</b>	<b>17</b>	<b>18</b>
<b>ASIA &amp; PACIFIC</b>	<b>533</b>	<b>191</b>	<b>248</b>	<b>69</b>	<b>0</b>	<b>556</b>	<b>221</b>	<b>300</b>
Australia	65	62	100	40	0	66	66	107
China	N.A.	0	9	9	0	N.A.	0	11
India	0	0	5	5	0	0	0	5
Japan	470	129	126	7	0	470	155	167
New Zealand	0	0	10	10	0	0	0	12
Pakistan	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>20,250</b>	<b>16,897</b>	<b>16,460</b>	<b>4,034</b>	<b>4,133</b>	<b>21,340</b>	<b>18,440</b>	<b>17,810</b>

was pointed out that if the European countries and Canada increased their per capita consumption of paper to the U. S. 1937 level, and if the Latin American and Oriental nations achieved only half that rate, world consumption of paper would be skyrocketed to 106 million tons a year (it was only 33 million tons in 1937).

It is easy enough to see that if just very slight increases were made over the 1947 per capita figures on wood pulp and pulp

products consumption, that there would be a demand for pulpwood and pulp far in excess of present needs.

A survey by the Canadian Pulp & Paper Association and the U. S. Pulp Producers Association, even without figures from Russia and Russian satellite nations, places worldwide pulp production at an all-time record high of 28,297,000 tons in 1948 and consumption at 27,473,000 tons. They calculate present capacity for pulp produc-

tion at 34,133,000 tons. If world demand is ever doubled or tripled by spread of literacy and high standards of living, this capacity is far short of needs.

Production of pulpwood was placed at 97 million cubic meters in 1947 by the FAO (a cu. meter equals 35.31 cu. ft. and there is said to be 30 trillion cu. ft. of timber in the northern hemisphere of the world, where virtually all the coniferous timber exists, this being timber used for pulp but also for many other products).

**Statistics on Regions—  
As Shown on Cover**

The FAO statistics on worldwide consumption of pulp and pulp products was culled from information gathered last year in replies received from 95 countries and territories and also from reports made by governments to the FAO conference in Washington in November.

Consumption is based on domestic production, plus imports, less exports, with a

suitable adjustment for changes in stock, says the FAO.

Although Russia, the Russian satellite nations, Spain, Argentina and some other nations did not make reports on per capita consumption, the world figure of 30.87 lbs. per person, and six regional figures shown in the illustration on the cover page of this Review Number are based on the actual reports plus estimates for non-reporting countries. These figures, as shown on our cover drawing, are:

**1947 Per Capita Consumption of Wood Pulp and Pulp Products**

**Regional and Worldwide Averages  
—in Pounds**

All the World.....	30.87
U. S., Canada and Newf'd.....	244.75
Oceania (Aus., New Zea., New Cal.)	122.45
Europe.....	46.3
Latin America.....	17.00
Near East and North Africa.....	4.41
South Asia and East Asia.....	0.08
South Africa.....	2.00

## **WORLD-WIDE WOOD PULP STATISTICS for 1947 and 1948**

*This data is result of surveys by Canadian Pulp & Paper Assn. and U. S. Pulp Producers Assn. It is incomplete because no information was available from Russia, Russian Zone of Germany, and Russian satellites—Bulgaria, Hungary, Poland, Rumania and Yugoslavia. Therefore, under "European-Eastern" there is no breakdown as these figures represent only negotiable amounts obtained from Greece and Turkey. "NA" means not available.*

**SUMMARY — TOTAL MECHANICAL WOOD PULP BY COUNTRIES**

(In 000's of tons of 2000 pounds, air dry weight)

	1947			1947		1948		
	Capacity	Production	Consumption	Imports	Exports	Capacity	Production	Consumption
<b>AMERICA</b>								
North	<u>7,405</u>	<u>6,792</u>	<u>6,770</u>	<u>323</u>	<u>312</u>	<u>7,774</u>	<u>6,952</u>	<u>6,927</u>
Canada	<u>7,263</u>	<u>6,688</u>	<u>6,659</u>	<u>315</u>	<u>312</u>	<u>7,625</u>	<u>6,825</u>	<u>6,792</u>
Newfoundland	<u>4,478</u>	<u>4,281</u>	<u>3,965</u>	<u>1</u>	<u>312</u>	<u>4,550</u>	<u>4,355</u>	<u>4,039</u>
United States	<u>528</u>	<u>340</u>	<u>340</u>	<u>0</u>	<u>-</u>	<u>555</u>	<u>530</u>	<u>528</u>
United States	<u>2,457</u>	<u>2,067</u>	<u>2,354</u>	<u>314</u>	<u>0</u>	<u>2,720</u>	<u>2,140</u>	<u>2,425</u>
Latin	<u>140</u>	<u>104</u>	<u>111</u>	<u>8</u>	<u>0</u>	<u>149</u>	<u>127</u>	<u>135</u>
Argentina	<u>6</u>	<u>5</u>	<u>7</u>	<u>3</u>	<u>0</u>	<u>6</u>	<u>5</u>	<u>7</u>
Brazil	<u>88</u>	<u>66</u>	<u>71</u>	<u>5</u>	<u>0</u>	<u>96</u>	<u>88</u>	<u>94</u>
Chile	<u>14</u>	<u>13</u>	<u>13</u>	<u>0</u>	<u>0</u>	<u>14</u>	<u>14</u>	<u>14</u>
Columbia	<u>0</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-</u>
Cuba	<u>0</u>	<u>0</u>	<u>-</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-</u>
Mexico	<u>52</u>	<u>20</u>	<u>20</u>	<u>0</u>	<u>0</u>	<u>33</u>	<u>20</u>	<u>20</u>
<b>EUROPE</b>								
Northern	<u>4,458</u>	<u>2,401</u>	<u>2,585</u>	<u>484</u>	<u>497</u>	<u>4,466</u>	<u>2,639</u>	<u>2,470</u>
Finland	<u>2,816</u>	<u>1,573</u>	<u>1,082</u>	<u>0</u>	<u>496</u>	<u>2,816</u>	<u>1,571</u>	<u>964</u>
Norway	<u>1,168</u>	<u>546</u>	<u>449</u>	<u>0</u>	<u>97</u>	<u>1,168</u>	<u>441</u>	<u>531</u>
Sweden	<u>766</u>	<u>358</u>	<u>193</u>	<u>0</u>	<u>152</u>	<u>766</u>	<u>441</u>	<u>193</u>
Western	<u>882</u>	<u>689</u>	<u>440</u>	<u>0</u>	<u>247</u>	<u>882</u>	<u>689</u>	<u>440</u>
Belgium	<u>7</u>	<u>6</u>	<u>8</u>	<u>1</u>	<u>0</u>	<u>7</u>	<u>6</u>	<u>7</u>
Denmark	<u>754</u>	<u>367</u>	<u>852</u>	<u>475</u>	<u>0</u>	<u>762</u>	<u>474</u>	<u>898</u>
Eire	<u>45</u>	<u>43</u>	<u>88</u>	<u>46</u>	<u>0</u>	<u>50</u>	<u>50</u>	<u>95</u>
France	<u>7</u>	<u>1</u>	<u>18</u>	<u>20</u>	<u>0</u>	<u>7</u>	<u>1</u>	<u>19</u>
Great Britain	<u>386</u>	<u>246</u>	<u>301</u>	<u>59</u>	<u>0</u>	<u>386</u>	<u>321</u>	<u>382</u>
Netherlands	<u>231</u>	<u>52</u>	<u>523</u>	<u>292</u>	<u>0</u>	<u>232</u>	<u>57</u>	<u>300</u>
Spain	<u>55</u>	<u>17</u>	<u>65</u>	<u>48</u>	<u>0</u>	<u>55</u>	<u>17</u>	<u>65</u>
Central	<u>32</u>	<u>28</u>	<u>34</u>	<u>6</u>	<u>0</u>	<u>32</u>	<u>28</u>	<u>34</u>
Austria	<u>881</u>	<u>455</u>	<u>461</u>	<u>8</u>	<u>1</u>	<u>881</u>	<u>588</u>	<u>601</u>
Czechoslovakia	<u>121</u>	<u>47</u>	<u>46</u>	<u>0</u>	<u>1</u>	<u>121</u>	<u>77</u>	<u>76</u>
Germany - Russian Zone	<u>110</u>	<u>65</u>	<u>62</u>	<u>-</u>	<u>-</u>	<u>110</u>	<u>82</u>	<u>81</u>
Germany - Other Zones	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>
Italy	<u>419</u>	<u>164</u>	<u>164</u>	<u>0</u>	<u>0</u>	<u>419</u>	<u>209</u>	<u>220</u>
Switzerland	<u>165</u>	<u>115</u>	<u>120</u>	<u>5</u>	<u>0</u>	<u>165</u>	<u>154</u>	<u>155</u>
SOUTH AFRICA, Union of	<u>66</u>	<u>66</u>	<u>69</u>	<u>3</u>	<u>-</u>	<u>66</u>	<u>66</u>	<u>69</u>
<b>ASIA &amp; PACIFIC</b>								
Australia	<u>554</u>	<u>256</u>	<u>256</u>	<u>=</u>	<u>0</u>	<u>555</u>	<u>266</u>	<u>266</u>
China	<u>41</u>	<u>37</u>	<u>37</u>	<u>0</u>	<u>0</u>	<u>40</u>	<u>37</u>	<u>37</u>
India	<u>N.A.</u>	<u>5</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>N.A.</u>	<u>7</u>	<u>7</u>
Japan	<u>0</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-</u>
New Zealand	<u>500</u>	<u>184</u>	<u>184</u>	<u>0</u>	<u>0</u>	<u>500</u>	<u>210</u>	<u>210</u>
Pakistan	<u>13</u>	<u>12</u>	<u>12</u>	<u>0</u>	<u>0</u>	<u>13</u>	<u>12</u>	<u>12</u>
TOTAL	<u>12,415</u>	<u>9,429</u>	<u>9,389</u>	<u>107</u>	<u>809</u>	<u>12,793</u>	<u>9,857</u>	<u>9,663</u>

### Trends in the United States

Showing the inexorable long term upward climb of paper consumption hand in hand with population increases, are charts which have frequently been published by the American Paper & Pulp Association.

The population of the United States, for example, which was estimated to have reached 147,707,000 this year, is expected to climb to 149,242,000 next year; 158,563,000 in 1960, and 169,805,000 in 1975. These are Bureau of Census forecasts based on a climbing birth rate and declining death rate.

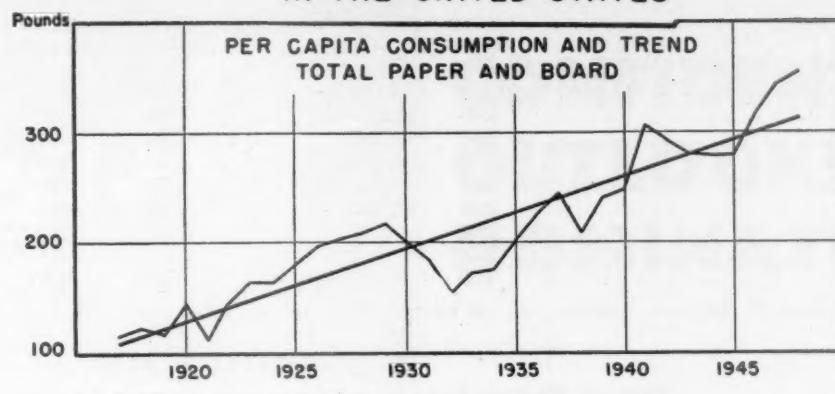
"Without any increase in per capita consumption," says the APPA, "the increase in population alone will, by 1950, result in an increase in overall consumption of 1,000,000 tons annually. (over 1947). U. S. consumption rose from 24,748,602 in 1947 to 26,257,445 in 1948, more than the million increase in one year and two years ahead, but per capita use also climbed from 343.7 to 358.5."

However, as many expect a leveling off this year and next, we may see what Dr. Louis T. Stevenson, APPA economist, calls the "sawtoothed upward movement of per capita consumption" and by 1950 a long-term gain will be established. This has always—always—been true in the past.

Cola Parker, president of APPA and president of Kimberly-Clark, ably expresses a corollary thought — perhaps even a more important one—on this trend, this way:

"This is one industry whose production, as it increases, also forces increased demand. As civilization spreads, demand for paper again increases."

### IN THE UNITED STATES



SOURCE: AMERICAN PAPER AND PULP ASSOCIATION

D. Clark Everest, president of Marathon Corp., also stressed the assured favorable influence of population trends on maintaining a high rate of paper consumption in addresses he made this spring in New York Paper Week meetings and later in New York before the National Paper Trade Association.

### Per Capita Paper Use in Latin America

Estimates of per capita paper use in Latin American countries also have been compiled by the staff of the division of forestry and forest products by the Food and Agricultural Organization of the United Nations. This, of course, is on paper use basis rather than the wood pulp basis used in the other FAO tables in this section.

Average annual consumption per person for the years of 1945-46 of paper, paperboard and converted paper products by countries was reckoned as follows:

Lbs. per Person

Country	Lbs. per Person
Argentina	41.9
Bolivia	1.1
Brazil	10.1
Chile	21.6
Colombia	5.5
Costa Rica	6.0
Cuba	32.2
Dominican Republic	3.3
Ecuador	2.0
Guatemala	1.3
Mexico	17.4
Panama	16.3
Peru	8.4
El Salvador	3.3
Uruguay	25.6
Venezuela	9.7
Latin America Avge.	14.6

Country	Lbs. per Person
Argentina	41.9
Bolivia	1.1
Brazil	10.1
Chile	21.6
Colombia	5.5
Costa Rica	6.0
Cuba	32.2
Dominican Republic	3.3
Ecuador	2.0
Guatemala	1.3
Mexico	17.4
Panama	16.3
Peru	8.4
El Salvador	3.3
Uruguay	25.6
Venezuela	9.7
Latin America Avge.	14.6

# General Information

Our information indicates these totals for the number of companies and mills in the U. S.:

Co.'s	—Mills—	
	Paper	Pulp
1945	522	723
1946	517	735
1947	560	758
1948	570	768
No. of Operators	Wage Earners	Wages Paid
1849	443	\$1,497,792
1850	555	10,911
1869	677	18,021
1979	742	25,631
1889	649	31,050
1899	763	49,646
1909	777	57,978
1919	729	113,759
1929	883	128,049
1933	781	107,298
1939	832	137,445
1940	854	146,500
1941	891	157,800
1942	897	157,700
1943	900	150,000
1944	890	146,400
1945	874	145,500
1946	837	167,000
1947	999	195,000
Years	Operations	Industry Worth
1849	6,785	\$1,497,792
1850	10,911	2,767,712
1869	18,021	7,208,691
1979	25,631	8,970,133
1889	31,050	13,204,828
1899	49,646	89,829,548
1909	57,978	20,746,426
1919	113,759	135,690,642
1929	125,000,000	905,794,583
1933	99,194,024	(not avail.)
1939	175,687,842	1,700,000,000
1940	195,000,000,000	1,770,000,000
1941	243,000,000	1,860,000,000
1942	274,000,000	1,920,000,000
1943	299,000,000	1,990,000,000
1944	315,000,000	2,050,000,000
1945	323,000,000	2,130,000,000
1946	366,000,000	2,290,000,000
1947	530,000,000	2,870,000,000

Source: American Paper and Pulp Association; U. S. Labor Statistics; Census.

### Principal Statistics of Canadian Pulp and Paper Industry

Year	Establishments	Capital	Employees	Salaries and Wages	Fuel and electricity used	Materials and supplies used	Gross Value of products
	No.	\$	No.	\$	\$	\$	\$
1919	99	275,767,364	26,647	32,264,208	12,503,197	54,064,801	137,912,502
1920	100	347,553,333	31,298	45,253,893	16,989,356	84,206,788	236,420,176
1921	100	379,812,751	24,619	34,199,090	14,961,741	62,276,224	151,003,165
1922	104	381,006,324	25,830	32,918,955	13,000,002	64,692,722	158,950,956
1923	110	417,611,678	29,234	38,382,845	18,421,804	71,322,722	184,821,511
1924	115	459,457,696	27,627	37,649,528	17,396,375	72,233,876	179,259,504
1925	114	460,397,772	28,031	38,560,905	17,506,735	76,514,990	193,092,937
1926	115	501,184,714	31,279	44,175,502	20,424,405	85,365,465	215,370,274
1927	114	579,853,552	32,876	45,674,203	24,024,319	84,813,080	219,329,753
1928	110	685,087,459	33,014	47,322,648	24,546,957	88,490,421	233,077,236
1929	108	664,773,806	34,202	24,114,445	25,356,000	96,874,749	243,970,761
1930	109	703,937,104	33,207	45,774,976	26,158,260	81,992,255	215,674,246
1931	103	630,176,540	26,669	34,792,013	22,927,919	63,947,678	174,733,954
1932	98	597,550,013	24,561	28,348,128	19,821,839	48,970,967	135,648,729
1933	95	559,265,544	24,037	26,057,542	18,902,330	47,832,621	123,415,492
1934	95	554,973,891	26,903	33,307,043	21,977,913	53,426,534	152,647,756
1935	95	545,572,938	27,836	35,893,313	22,682,883	57,995,037	159,325,546
1936	93	536,073,034	29,478	39,440,074	25,690,006	72,202,983	153,632,956
1937	98	570,352,287	33,205	48,757,795	29,121,065	91,121,629	226,244,711
1938	99	594,908,222	30,943	42,619,311	23,800,737	71,062,580	163,897,503
1939	100	597,908,918	31,016	44,737,379	25,004,978	79,933,657	206,153,295
1940	103	642,979,942	34,719	58,073,812	31,045,406	108,758,862	298,084,843
1941	106	678,937,841	37,154	63,677,818	34,437,122	125,437,012	334,726,175
1942	105	655,598,190	38,002	69,650,393	36,226,420	133,970,437	336,697,277
1943	106	667,458,143	37,020	71,199,422	36,211,064	143,956,462	345,653,470
1944	104	*	37,896	75,833,405	37,358,842	157,995,141	369,846,086
1945	109	*	39,998	80,462,644	39,033,131	179,369,490	398,804,515
1946	113	850,000,000	44,967	101,364,636	46,292,000	223,448,333	527,814,916
1947	115	900,000,000	49,946	129,477,995	55,442,396	295,444,332	706,971,682
1948	115	1,100,000,000	51,000	146,000,000	56,000,000	226,500,000	800,000,000

\*Not available.

†Estimated.

### UNITED STATES PULP & PAPER INDUSTRY STATISTICS

	Billions		Millions		No. of Employees Thousands	Tons Per Employee	Wages Per Ton	Unit Production Per Man Hr.
	Assets	Net Worth	Sales	Taxes				
1939.....	\$2.36	\$1.70	\$1.45	\$49	\$176	138	98	\$13.0 100.0
1940.....	2.46	1.77	1.75	95	195	146	99	12.4 101.9
1941.....	2.61	1.86	2.36	241	246	161	111	13.8 104.6
1942.....	2.68	1.92	2.46	265	284	164	104	16.6 101.9
1943.....	2.76	1.99	2.59	254	320	160	106	18.8 96.3
1944.....	2.81	2.05	2.77	261	339	158	109	19.7 97.2
1945.....	2.97	2.13	2.88	214	352	159	109	20.2 99.1
1946.....	3.28	2.42	3.55	257	429	184	105	22.2 104.6
1947.....	4.03	2.87	4.77	355	530	195	108	25.2 109.3

Estimates for 1947. Source: American Paper and Pulp Assn. except labor data which is by U. S. Bureau of Labor Statistics.

### UNITED STATES

**Paper and Woodpulp Production and Consumption (latter for paper only—excluding rayon, plastics, etc.)**  
**Consumption of Domestic and Imported Pulpwood and Total Pulpwood Consumption**

Year—	PAPER		WOODPULP		CONSUMPTION OF PULPWOOD		
	Production (tons)	Consumption (tons)	Production (tons)	Consumption (for paper only) (tons)	Domestic (cords)	Imported (cords)	Total (cords)
1899.....	2,167,593	2,158,000	1,179,525	1,216,254	1,617,093	369,217	1,986,310
1904.....	3,106,696	3,049,824	1,921,768	2,091,006	2,477,099	573,618	3,050,717
1909.....	4,216,708	4,224,000	2,495,523	2,856,593	3,207,653	793,954	4,001,607
1914.....	5,270,047	5,496,164	2,893,150	3,556,377	3,641,063	829,700	4,470,763
1919.....	6,190,361	6,479,490	3,517,952	4,113,911	4,445,817	1,032,015	5,477,832
1920.....	7,334,614	7,846,827	3,821,704	4,696,035	5,014,513	1,099,559	6,114,072
1921.....	5,356,317	6,053,915	2,875,601	3,544,218	3,740,406	816,773	4,557,179
1923.....	8,029,482	9,339,573	3,788,672	5,149,695	4,636,789	1,236,081	5,872,870
1925.....	9,182,204	10,590,090	3,962,217	5,390,304	5,005,443	1,088,376	6,093,821
1927.....	10,002,070	11,915,233	4,313,403	5,960,865	5,526,889	1,224,046	6,750,935
1929.....	11,140,235	13,347,925	4,862,885	6,704,341	6,411,566	1,233,443	7,645,011
1931.....	9,381,840	11,403,850	4,409,344	6,005,718	5,896,446	826,320	6,722,766
1932.....	7,997,872	9,733,764	3,760,267	5,083,446	4,891,424	741,699	5,633,123
1934.....	9,186,266	11,185,682	4,436,128	5,969,633	5,822,681	973,978	6,796,659
1935.....	10,506,193	12,490,886	4,923,669	6,877,869	6,390,942	1,037,332	7,628,274
1936.....	11,670,000	14,546,046	5,695,219	7,420,829	7,506,156	1,209,760	8,715,916
1937.....	12,600,000	15,798,362	6,572,918	8,692,489	8,870,932	1,522,868	10,393,800
1938.....	13,327,000	13,488,300	5,933,560	7,975,000	7,900,033	1,293,938	9,193,991
1939.....	13,509,642	15,930,349	6,993,334	9,058,415	9,685,592	1,130,874	10,816,466
1940.....	14,483,709	16,620,632	8,959,559	9,781,739	12,564,180	1,435,820	14,000,000
1941.....	17,762,365	20,391,412	10,375,422	11,363,600	15,400,000	1,292,640†	16,692,640
1942.....	17,083,862	19,608,862	10,783,430	11,038,020	15,972,000	1,232,000	17,204,000
1943.....	17,035,688	19,560,688	9,680,462	10,635,320	15,000,000	1,718,000	16,718,000
1944.....	17,182,804	19,485,887	10,108,443	10,502,204	14,819,000	1,650,000	16,469,000
1945.....	17,370,965	19,665,487	10,167,200	10,825,412	15,315,000	1,699,000	17,014,000
1946.....	19,277,667	22,509,788	10,605,223	12,088,500	16,089,560	1,728,000	17,817,560
1947.....	21,101,833	24,748,602	11,945,864	13,285,435	17,714,229	2,000,000	19,714,229
1948.....	22,062,445	26,257,445	12,872,292	14,331,505	18,939,458	2,250,000	21,189,458

Source: Bureau of the Census, United States Forest Service and A. P. & P. A. Bureau Foreign and Domestic Commerce, U. S. Pulp Producers Association.

†Available for nine months of 1941 only. Other 1941 figures estimated for 12 months.

Note: Pulp consumption for all purposes—paper, rayon, plastics, etc.—was 14,961,505 tons in 1948, 13,855,435 tons in 1947, 12,565,000 tons in 1946, 11,362,600 tons in 1945 and 11,066,204 tons in 1944.

Canada's importance as a producer of pulp and paper has been further enhanced as a result of the union effected this year with Newfoundland, now a province of Canada.

The total value of Newfoundland's exports last year was nearly \$78,000,000, of which 32% represented newsprint and other kinds of paper (about 400,000 tons), fisheries products alone ranking higher with 36%.

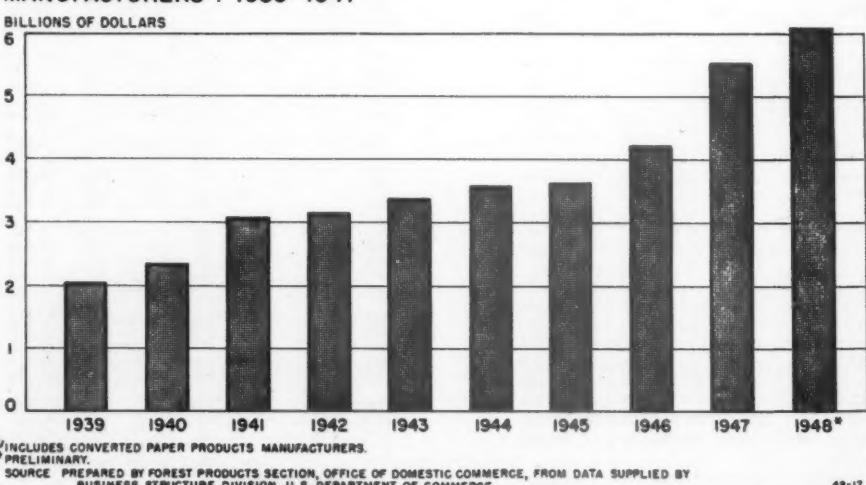
Export of newsprint and other paper products from Newfoundland in 1948 represented \$25,729,000, compared with \$20,735,000 in 1947. The United States took \$13,015,000 worth of these exports last year; the United Kingdom \$5,713,000 and other countries \$7,892,000.

#### Canadian Exports of Pulp and Paper

1948

Wood Pulp .....	\$211,564,000
Newsprint .....	383,123,000
Paper, other .....	33,559,000
Total Pulp and Paper.....	628,246,000
Total all exports.....	3,075,800,000
Pulp-Paper % of total.....	20.4%

#### ANNUAL VALUE OF SHIPMENTS OF U. S. PULP AND PAPER MANUFACTURERS<sup>1</sup>: 1939-1947





This is "dream paper machine of the future" as conceived by Black-Clawson engineers (they're not taking orders—this was just drawn for amusement).

## CONFIDENT OUTLOOKS DOMINATE

# Long View Is Good

What are the realities which the paper industry is facing? Briefly, they are these: Lower prices, increased consumer resistance, possible shutdowns of marginal and high cost mills—or certainly a reduced week; more attention to quality; and necessity of market research on new uses. None of these realities were too tough for the present condition of the industry, for never in its long history had it been so able and ready to face them. As remarked by W. LeRoy Neubrech, the observant chief of the Pulp & Paper Section, Forest Products Division, Department of Commerce: "The attitude of officials in the industry, despite the apparent modification of demand and the consequent softening of prices in certain grades, is one of quiet confidence from which the element of discouragement is conspicuously absent."

Non-integrated mills could see some silver linings, too. Pulp prices were readjusting further. It appeared that the Scandinavian mills were going to be able to produce more this year, particularly Finland. Waste paper prices were softening still, and consumption of higher grades of waste was on the increase, indicating that this class of raw material would still remain on a competitive level with pulp. But inferior grades of waste, purchased on a tight market, has been clogging badly in the warehouses.

### Industry Is Prepared

Dr. Louis T. Stevenson, statistician for APPA and author of "The Background and Economics of Papermaking" says: "It would appear that the major readjustment in the industry has now taken place and we can look for a leveling off into normal operations. Never in its history has the industry been in a better position to face readjustment and this fact is showing in the current phase."

While it was true that there were a number of shutdowns in sizable mills early in April, over-all observers characterized these as "inventory" shutdowns and "take stock" shutdowns and none of them were scheduled to last more than

two weeks. Most of them were for a period of one week. Some felt that shutdowns of certain small marginal mills in the Northeast might be of a permanent nature, but there was nothing at time of going to press to verify this—and the softening of pulp prices could well bring some of them into a more advantageous position than at any time since the end of the war. It should also be considered that many marginal mills were about to go into permanent shutdowns just prior to the war and the industry had almost adjusted itself to this reality. The tremendous production necessitated by all-out war brought back into full production every mill that could turn a wheel. There were even mills which had been purchased for junk which, at war's outbreak, were again set into motion making paper.

Cola G. Parker, president of the American Paper and Pulp Association and president of Kimberly-Clark Corp.:

"So long as per capita consumption remains at 350 lbs. or better, I can see no occasion to anticipate any great cataclysm. Population continues to grow."

Roy K. Ferguson, president of St. Regis Paper Co., on Apr. 8:

"It is my opinion that the present adverse condition will come to an end during the second quarter of 1949 and through the third and fourth quarters, demand will return to higher levels."

"I stated a year ago there was evidence that prices were beginning to show signs of 'leveling off.' He reported first quarter's sales at \$34,903,000 compared with the record \$40,394,000 in first quarter 1948."

James H. Allen, pioneer builder of the Southern pulp and paper industry and vice chairman of St Regis Paper Co.:

"Despite the spectacular 15-year growth of the Southern pulp and paper industry which has brought new wealth and resources to the South, that industry is still in its infancy in relation to its potentialities."

One of the leading industry organization officials, whose predictions in past years have been very close to the mark, in April forecast 1949 U. S. paper consumption of domestic product at 21,000,000 tons. If added to 4,400,000 tons of imported newsprint (equalling imports of 1948), total U. S. paper consumption would be 25,400,000 tons in 1949.

This figure would be the second highest consumption tonnage in U. S. history—next to 26,257,445 tons in 1948 and over the previous record of 24,748,602 tons in 1947. U. S. imports of newsprint in 1949, however, were nearly 9% higher for the first quarter than ever before.

\* \* \*

Dr. Charles F. Roos, Kraft Paper Association economic advisor:

"Demand for kraft paper could amount to as much as 2,400,000 tons in 1949. Consumers and converters will prefer to meet much of their requirements from inventories, with the result that production will not fully reflect actual consumption and there will be a return to seasonal demands, with periods of inadequate capacity and others of surplus production."

\* \* \*

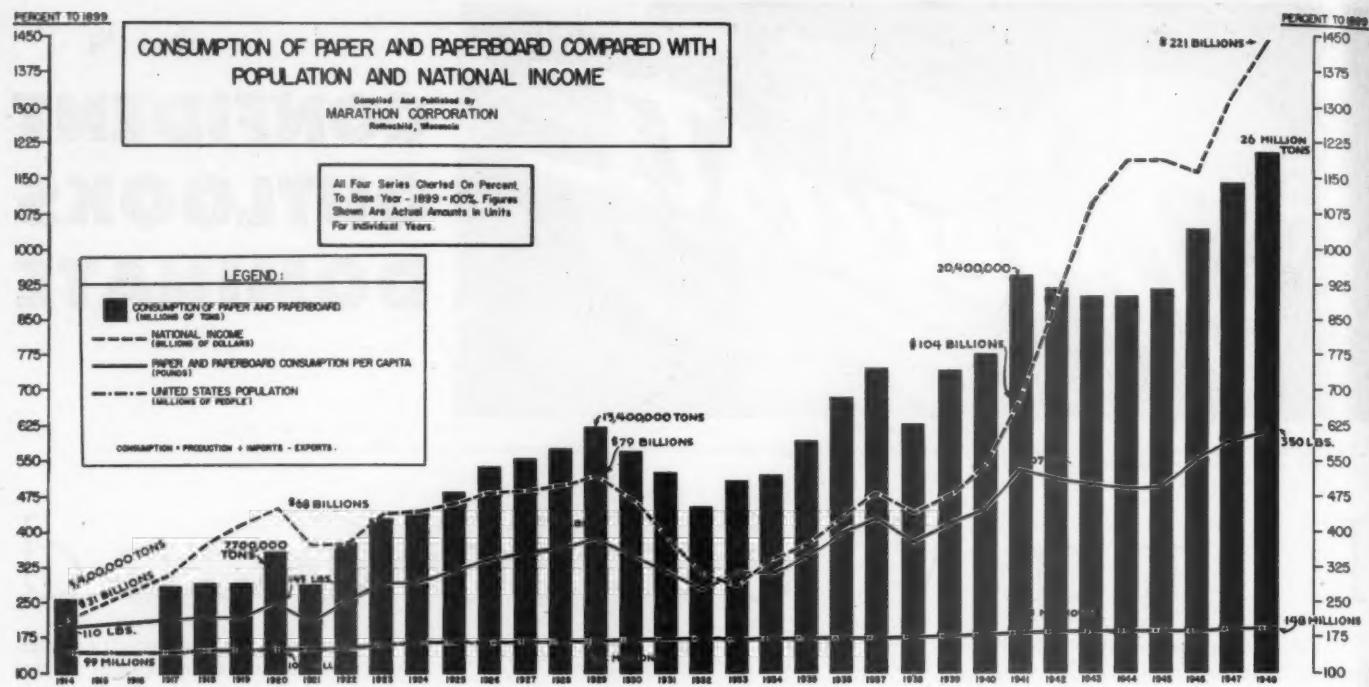
The AFL Pulp, Sulfite and Paper Mill Workers Brotherhood official organ:

"Return of competition to the industry can well mean that many companies will be better off than during the past several years. In spite of the fact that some mills and plants will be hard pressed, in spite of the price drops, and in spite of the leveling off of demand and employment, many producers will be in an improved position. One reason is the gradual elimination of overtime work and the penalty rates for overtime. Another is the reduced labor turnover and increased labor efficiency that a plant can expect as it stabilizes its work force."

\* \* \*

William McC. Cameron, vice chairman of Celanese Corp. of America, builder of a new pulp mill in British Columbia:

"The present decline in volume (April 13) does not in any way alter our views



THIS IS THE CHART which was basis for optimistic long term forecasts made by D. Clark Everest, President of Marathon Corp., at the Paper Week and the National Paper Trade Association meetings in New York this year. Our artist has somewhat abbreviated the chart Mr. Everest used—  
in order to reproduce it on this page. We have also revised estimates he had for 1948, with later official figures.

as to the future of our company's products."

\* \* \*

John L. Riegel, president and treasurer of Riegel Paper Corp.:

"The demand for paper has fallen off moderately. On the other hand, we believe that our costs are under better control than was possible last year. During the first eight weeks of 1949, our net income before taxes ran about 10% ahead of net income before taxes and inventory reserve in the corresponding period of 1948. Our volume of business has been relatively steady because of the traditional stability of our principal customer, the food industry."

\* \* \*

John E. Alexander, president and general manager, Nekoosa-Edwards Paper Co., on Apr. 2:

"We face the future with confidence. New uses are being found daily for paper products. At present, consumption is running nearly one pound per person per day in the U. S."

\* \* \*

Henry G. Boon, vice president in charge of operations, Kimberly-Clark Corp.:

"Business in 1949 will go to those mills which give the best quality, the best service and the price that is right."

\* \* \*

R. M. Fowler, president of Canadian Pulp and Paper Association:

"Paper industries of both Canada and the U. S. are sufficiently virile, imaginative and progressive to grasp the new trading opportunities presented in an area of the world (North America) which is becoming increasingly one great and spectacular economic area."

"With a host of unfilled demands, ex-

panding defense program and an unconstructed world, we should be secure against depression. But if everyone expects the worst, accepts it as inevitable, makes only feeble efforts to avoid it, cries wolf at every possible opportunity, then the worst will surely come."

\* \* \*

On this page we publish our own artist's slightly abbreviated reproduction of the Marathon Corp.'s chart showing the consumption of paper and paperboard in the U. S. in comparison with populations and national income trends over many years. This chart was the background for optimistic speeches which D. Clark Everest, president of Marathon, made this spring at the National Paper Trade convention in New York and twice at Paper Week in New York. Therefore, the chart is somewhat famous among industry men. Consistent growth of the industry through new uses of paper and increased population—the basis for Mr. Everest's predictions—is visualized in this chart.

Mr. Everest's predictions:

"I still feel that the (U.S.) consumption of paper and paperboard for 1949 will be at or very near the 1948 level, depending on the ability of the United States and Canada to physically meet the demand."

"If my assumptions are right this country is faced with the worst manpower shortage this country has ever experienced. Continuous pressure for shorter work weeks will not help this situation."

"Consumption will be maintained at a high level because the current income of the people is high. Income will be maintained at a high level unless increased taxation develops."

"Careful analysis shows that over a period of 35 years the consumption of goods, which is the basis of all business, has been on the increase at least 85% of the time."

\* \* \*

M. C. Dobrow, executive secretary, Writing Paper Manufacturers' Association:

"U. S. production of all types of paper reached an all-time peak in 1948, 4% higher than 1947 and 63% higher than 1939. There is little likelihood that a new production record will be made this year and perhaps not even in 1950."

\* \* \*

Dernell Every, secretary, Kraft Paper Association:

"Even if retail trade has to resort to sales and bargain days to attract customers, wrapping paper has to be used to wrap the bargains."

\* \* \*

One could do a little better than guess at the 1949 rates of production and consumption by looking at current conditions in some of the industries and businesses affecting the paper industry. At Hot Springs, Va., late in March, the Association of National Advertisers took a long hard look at advertising. They found advertising budgets and prospects for 1949 "spotty" but only a minority of 122 member companies expected business to be under 1948. Companies doing more than \$50,000,000 in volume were more optimistic than smaller concerns. Only 10% of both industrial and consumer goods advertisers found the profit outlook poor, with the larger companies again more optimistic. Fifty per cent of the 122 members queried felt advertising expenditures would be higher in 1949 than in 1948.



## WORK AT 34 SITES IS LISTED

# Millions Are Spent

According to information gathered from all parts of the continent by **PULP & PAPER** field editors there are at least 34 commercial scale, pilot plant or research projects which aim at alleviating the stream problems where some pulp and paper mills are located. It undoubtedly comes as a surprise to many even in this industry to know there are so many.

First off, it must be stressed that on many waterways, the cities and towns, food industries or other plants are much greater contributors to the problem than the pulp and paper mills, but nevertheless this industry is spending millions of dollars to try to ameliorate the situations existing in certain localities.

And a great many mills are contributing to joint or cooperative research even though they themselves may have no serious pollution problem or virtually no problem at all in their locality, thus demonstrating a high degree of "industrial good citizenship."

And another point which has so frequently been emphasized in this magazine, but important enough to bear repeating—most of this tremendous investment is being made without any assurance for the companies involved that they will get anything for their money—that discoveries will result which are economically feasible.

For more than 60 years, pulp mills have been trying to find practical methods for disposing or using mill effluents. There have been a few encouraging developments in just the past two or three years. But the final answers are not in yet.

An unusual picture is shown on the map drawn by our artist which accompanies this article. It shows in black dots scattered thickly over the continent where these projects are located. We have shown commercial projects in some cases; also pilot plants; also university or college research.

The pulp and paper industry of the U. S. and Canada have probably spent at least \$1,500,000 in these projects in

just the past two years, not counting a larger investment of several millions in individually-owned commercial plants.

### *Yeast Plant in Wisconsin*

A \$500,000 Lake States Yeast Corp. plant has started operations producing a fodder yeast for stock feeding from one-half of the spent sulfite liquor of the Rhinelander mill at Rhinelander, Wis. Thirteen Wisconsin and Michigan mills paid for it. Now it's in the laps of the farmers whether they buy this rich vitamin food for their stock or something else.

This Wisconsin Sulfite Pulp Manufacturers' League (with one Michigan member) also taxes its members \$65,000 a year, pro rated on a tonnage basis, for various research projects. One just recently started up in Appleton at the Interlake mill of Consolidated Water Power & Paper Co. is testing of a new Swedish method of sulfite liquor boiling and burning with evaporation of calcium base liquor.

Along with this Lake States work, perhaps the biggest research enterprise on the continent has been the elaborate program being carried on at the University of Washington with 20 mills of that state taxing themselves on the basis of tonnage to support it. This has been going on at the minimum rate of \$50,000 to \$60,000 a year since 1944 and it is really several projects, with an internationally expert staff gathered there, and it has turned up some interesting but promising methods of developing useful resins from liquor and inorganic chemicals and of disposing as well as using the spent liquor.

### *MgO Plant in Longview on Trial*

Of the commercial scale plants in operation, certainly one of the most significant is the full-scale magnesia base sulfite mill recovery plant which recovers heat and chemicals at the Weyerhaeuser Timber Co. operations in Longview, Wash., and started up last October after over a decade of research and experiment

by Weyerhaeuser, Babcock & Wilcox Co. and Howard Smith Paper Mills of Canada. The plant designed by Otto C. Schoenwerk, of Chicago, was described in detail in the first authorized complete article in **PULP & PAPER'S** Nov. 1948 issue. It represents a considerable investment for any mill and the statistics which are depended upon to prove its success can only be revealed after many months of operation.

The important point about the plants shown on the accompanying map which make products from spent liquor is that, in many cases, their markets are highly uncertain or the products of just one or two mills will quickly saturate the market. This, of course, is true of the vanillin, made in one mill in Wisconsin and one in Quebec, producing enough for the whole continent and for export. The alcohol plants have been an interesting development and they have had some success thus far, but their absorption of mill waste is only partial.

Since the Ontario Paper Co.'s pre-war plant at Thorold, Ont., was built, two more have risen, the million dollar wartime plant at Bellingham, Wash., by Puget Sound Pulp & Timber Co., and \$2,500,000 plant just put in operation this year at Gatineau, Que. Although using spent liquor from the Canadian International mill at Gatineau, this plant is owned by Commercial Alcohols, Ltd. It goes beyond the Bellingham mill in refinement of product and is larger. The Bellingham plant was designed to make 6,000 gallons a day, but efficient operation pushed this to 7,500. Gatineau is designed for 9,000 gallons using 900,000 gallons of liquor (all figures in U.S. gallons).

### *Council for Stream Improvement*

The National Council for Stream Improvement, with headquarters in New York, is the biggest cooperative enterprise of the U.S. industry in supporting research and other activities aimed at the stream problems. Mills in some 35 states are participating members and contribu-



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### Here's What This Industry Is Doing About the Stream Problems—

This map was prepared by PULP & PAPER's artist on the basis of information gathered all over the continent. It shows the location of 30 projects in the U. S. and Canada which are aimed at contributing toward the solution of stream pollution problems.

In many areas the pulp mills themselves are lesser contributors to pollution than cities, towns and food and other industries, yet the pulp and paper mills are spending millions—as this map shows—to find ways and means of alleviating the problem.

Many of these projects shown are industry-supported university or college research; or industry pilot plants; or, in a few cases, actual commercial scale installations at mills which may, or may not, prove to be answers to these problems:

- 1—Univ. of Washington, Seattle—Elaborate \$60,000-a-year research on uses and disposal of sulfite waste, supported by 20 mills.
- 2—Texas A. & M.—Kraft effluent studies.
- 3—Louisiana State University—kraft waste treatments.
- 4—Flambeau River aeration project.
- 5—Institute of Paper Chemistry, Appleton—Kraft effluents.
- 6—Interlake Mill, Appleton—Swedish sulfite evaporator; tickling filter.
- 7—Kalamazoo College—De-inking mill waste.
- 8—Univ. of Michigan—De-inking mill waste.
- 9—Purdue University—Strawboard waste research.
- 10—Univ. of Alabama—Kraft waste studies.
- 11—McGill University, Montreal—Cellulose and liquor research and personnel training.

ters to research which has been carried on for several years at Mellon Institute and at a number of colleges and universities and elsewhere. It has spent from \$150,000 to considerably over that amount in certain years since its inception.

On Apr. 22, 1943, the organizing committee composed of the industry's outstanding and forward-looking executives, met in New York and drafted the certificate of organization and by-laws of the National Council.

A board of governors was appointed which met May 14, 1943, and appointed

appropriate committees, fixed the assessment rates and prepared a plan for the solicitation of members on a national basis. Prior financial support of the corporation's activities was pledged by an original group of 21 pulp and paper companies.

George E. Dyke, chairman of the board of governors of the National Council, who is also president of Robert Gair Co., Inc., made this recent report on the council activities:

"During 1948 significant progress was made in all phases of our activities. Par-

- 12—Mellon Institute, Pittsburgh—treatment of effluent; de-inking wastes.
- 13—Manhattan College—Steam analysis.
- 14—Rutgers University—Supersonic white water treatment; thermophilic digestion of board waste.
- 15—University of Maine—Evaporation studies.
- 16—Bates College, Orono, Maine—Testing sulfite effluent effects.
- 17—Eastern Corp.—Ammonia base sulfite cooking.
- 18—Mersey Paper Co., Brooklyn, N. S.—Baker's Yeast plant.
- 19—Price Bros., Quebec—Waste liquor evaporation.
- 20—Gatineau, Que.—Sulfite liquor alcohol plant.
- 21—Howard Smith Paper Mills, Cornwall, Ont.—Vanillin; lignin Arborite; evaporation and burning.
- 22—Ontario Paper Co., Thorold, Ont.—Alcohol plant.
- 23—Riegel Paper Corp., Warren Glen, N. J.—Sludge dewatering; precipitation.
- 24—Glatfelter Co., Spring Cove, Pa.—Book mill wastes.
- 25—Virginia Polytechnic Institute—Semi-chemical wastes.
- 26—Terre Haute Paper Co., Terre Haute, Ind.—Strawboard anaerobic decomposition.
- 27—International Paper Co., Springhill, La.—Lime precipitation.
- 28—Bergstrom Paper Co., Neenah, Wis.—Filtration rates.
- 29—Marathon Corp., Rothschild, Wis.—Vanillin and lignin products.
- 30—Rhinelander Paper Co., Rhinelander, Wis.—\$500,000 sulfite liquor yeast plant, supported by 13 mills.
- 31—Oregon State College, Corvallis, Ore.—Aquatic biology; kraft waste toxicity.
- 32—Weyerhaeuser Timber Co.—MgO (magnesia) sulfite recovery plant.
- 33—Rayonier Incorporated, Shelton, Wash.—Ammonia sulfite liquor burning.
- 34—Puget Sound Pulp & Timber Co.—Sulfite alcohol and Lignosote plants.

ticularly this was true in the extension of the council's direct mill service program and the further development of cooperative relationships with state and other regulatory agencies. Research progress also continued, with two of the previously established projects reaching the pilot plant stage.

"A phase of the council's activities of extreme importance is the development of operational relationships with state and other regulatory agencies. In the past, representatives of such agencies have shown a great willingness to cooperate

with the industry in its efforts to meet mutual problems. During 1948 this spirit of cooperation was even more manifest. Such acceptance of the council's offers of cooperation indicates that our activities are being recognized as a sincere and honest effort on the part of this industry to help attain a common objective. This recognition is extremely desirable, not only for the industry but for the regulatory agencies as well, since it is generally acknowledged that pollution abatement can be achieved by cooperation between industry and government.

"No new research projects were established during the year. At the present time consideration is being given to the inauguration of additional research activities in connection with sulfite waste liquor problems. The research institutions employed during 1948 by the council included the following: Mellon Institute of Industrial Research, Purdue University, University of Michigan, Kalamazoo College, Institute of Paper Chemistry, Manhattan College, Virginia Polytechnic Institute, Louisiana State University and Oregon State College." (these projects are described with others under our map).

In a previous report the council listed some pilot plant operations in mills and discussed them as follows:

#### Six Pilot Plants

Paper industry interest in pilot plant operations in connection with treatment of mill effluent is currently running high, with National Council for Stream Improvement personnel taking an active part in the operation of the plants. The following pilot plant operations were listed by the National Council:

#### Springhill, La., Mill (Southern Kraft Div. of International Paper Co.)

A large-scale lime precipitation pilot plant has been in continuous operation at Springhill, using four 10 ft. x 12 ft. Dorr clarifiers.

#### Bergstrom Paper Co., Neenah, Wis.

Bergstrom Paper Co. has for several months operated a pilot plant at their Neenah mill to study filtration rates through the continuous operation of a 1 ft. x 1 ft. vacuum filter. Philip Morgan, council engineer, is assisting in this work which concerns a joint industry and city pollution problem. State and city officials are cooperating in the study.

#### Riegel Paper Corp., Warren Glen, N. J.

Council employees are cooperating with Metcalf & Eddy, consulting engineers, and Riegel Paper Corp. in the operation of a precipitation clarification, and sludge dewatering pilot plant at the Warren Glen Mill.

#### P. H. Glatfelter Co., Spring Grove, Pa.

Vaughn Behn, the council's Pennsylvania resident sanitary engineer, is assisting in the operation of the P. H. Glatfelter Company's pilot plant for treating mixed book mill wastes. The plant has been in operation for some six months.



THIS IS AN AIR VIEW of the new MgO plant built by Weyerhaeuser Timber Co. at Longview, Wash., a full scale magnesia base process recovery plant which recovers heat and chemicals from operations of the 275-ton per day bleached sulfite pulp mill at that city. In lower left foreground are Infico Accelerators and filter plant. The closely grouped series of concrete and steel buildings in the main part of the picture are connected by a maze of stainless steel tubing and here is some of the most elaborate automatically controlled industrial machinery ever seen in a pulp operation. Dumping, washing, evaporation, burning, separation of magnesium oxide and sulfur dioxide (both recovered), gas cooling, and acid fortification are the stages of the process described in full in November, 1948, PULP & PAPER.

#### Terre Haute Paper Co., Terre Haute, Ind.

Council engineers are assisting in the design and construction of a pilot plant at Terre Haute to handle strawboard mill wastes by the high-rate anaerobic decomposition process, a development of the Council's project at Purdue University. This is a large-scale plant with a main digestion tank 10 ft. x 12 ft. x 34 ft.

#### Michigan Paper Co. of Plainwell, Mich.

Recently the council personnel operated the pilot plant at Michigan Paper Co. for treating deinking mill wastes by the aeration process developed by the council. Plans are currently under way to construct a full-scale plant, using the process developed by the pilot plant operation, at one of the mills in the Kalamazoo Valley.

#### Another Mill Serves Roads

The Flambeau Paper Division of Kansas City Star Co., Park Falls, Wis., has been actively promoting use of its sulfite mill liquor as a road binder in areas adjacent to the mill.

"By last year we were able to haul about 80% of the sulfite liquor sufficient for a period of 20 weeks during the hot summer months," says Walter A. Sherman, sulfite superintendent, at Flambeau.

He explained that his firm first started experimenting with the distribution of this product in 1944. About 300 miles of roads close to the mill were treated with this road binder in 1948. This treatment has had previous requirements from 15 to 40,000 gallons per mile. Terrain, weather and traffic determine the amount used.

The binder is offered free to various agencies. A contract hauler is available. This charge for hauling is a low \$4.00 per hour and a typical 20-mile haul is accomplished in a little more than two hours. The binder is delivered in trucks carrying 3,000 gallons. It is sprayed on in 8-foot strips through truck shower pipes. Flambeau uses collection and storage tanks right at the mill.

#### OTHER RESEARCH PROJECTS IN U. S.

Below is a briefed listing by the APPA of the major research projects now under way in the pulp and paper industry outside of the mills themselves (and aside from those on stream improvement, previously listed). A complete listing and description of each project is available from APPA, according to William R. Maull, chairman of the committee on Coordination of Research, American Pulp & Paper Association.

#### NEW ENGLAND AND NORTHEAST:

**Northeastern Wood Utilization Council**—Bark utilization, hardwood utilization, recovery of chemicals from neutral semi-chemical sulfite process, production of furfural from wood, zylon—new Italian pulping process.

**University of Maine**—Acid manufacture, pulping, birch bark.

**New York State College of Forestry**—Grinding of hardwoods.

**Polytechnic Institute of Brooklyn**—Pulping wood from hickory.

**University of Pennsylvania, Towne Scientific School**—Coagulation, electrokinetics, chemistry of related lines.

**Lehigh University, National Printing Ink Research Institute**—Research on printing inks.

**Princeton University**—Research in cooperation with the Textile Foundation concerning the chemical structure of cellulose.

#### SOUTH:

**Georgia School of Technology**—Reaction of oxidized cellulose with amines, oxidation of cellulose in wood sawdust, characterization of oxidized cellulose, effect of aromatic solvents on sawdust at high pressures and temperatures.

**Herty Foundation**, Savannah, Ga.—Mechanical pulping of southern hardwoods, and of foreign hardwoods, neutral sulfite pulping of southern hardwoods, sulfate pulping of mill waste.

**North Carolina State College**—Hydrolysis of honey-locust sawdust and conversion to plastic-like product.

**Southern Research Institute, Univ of Alabama**—Utilization of hardwood waste, of soluble sugars, evaluation of paper bags, tissues for insulation, agricultural waste, dimensional stabilization of cellulose products.

**University of Texas**—Pulping of cotton linters.

#### MIDDLE WEST:

**Iowa State College, Ames, Ia.**—Agricultural residues.

**Michigan College of Mining and Technology**—Forest industry development, hardwood fiber production and use, harvesting potential wood material.

**Northern Regional Research Laboratory, Peoria, Ill.**—Agricultural residues, wheat straw papers.

**Institute of Paper Chemistry, Appleton, Wis.**—Very broad scope program in many phases.

**U. S. Forest Products Laboratory, Pulp and Paper Div., Madison, Wis.**—Semi-chemical pulping, sulfate pulping, groundwood pulping, coarse pulps from waste, pulp properties and processing, paper and board products.

#### PACIFIC COAST:

**Oregon Forest Products Laboratory, Oregon State College, Corvallis, Ore.**—Tannin, analysis of Douglas fir bark, chemical analysis of western woods.

**Washington State College, Pullman, Wash.**—Pulp industry economics, fodder yeast markets, and clay coating research.

**Development Laboratory, Weyerhaeuser Timber Co., Longview, Wash.**—Bark, lignin products, boards—this is outside of the company's Pulp Division.



## NEW MILLS STILL ARE GOING UP

# A Survey of Results

Beginning in 1945 and carrying into this year, a vast program of expansion and modernization, involving the expenditure of over \$1 billion, has been carried out by scores of companies in North America. It involved construction of a large number of entirely new mills, especially in the kraft field.

The year 1949 found this program drawing to a close, but there were still important new units to be completed this summer. Even after the supply of pulp and paper had apparently caught up with demand early this year, and after some restriction on production was required in certain areas and types of mills, this program was still going on.

Several mills in the South were still adding to their power and productive capacity. Entire new mills were still being built or completed in Childersburg, Ala.; Natchez, Miss.; Springfield, Ore.; East Antioch, Calif.; Nanaimo, British Columbia; Prince Rupert, British Columbia; Newcastle, New Brunswick, and Mexico City.

Modernization of many mills was urgently in need way back in 1940 and 1941 when war intervened and made the improvements impossible, just as a depression had forestalled improvements a few years before. Then the productive capacity was strained to the breaking point in many instances to meet demands of war and post-war years. And so, the expansion and modernization still being completed in this year of disinflation or readjustments has to a large degree merely restored the efficiency of the industry and its ability to cope with permanently increased paper demand.

Each year for several years now **PULP & PAPER** editors have made field surveys of the growth and modernization. They have found that nearly 3,000,000 tons of pulp production have been or will be, added to the North American capacity since the close of the war, and this year will bring the total capacity to about 19½ million tons. As for paper, about 3,700,000 tons have been and will be added, more than 3,000,000 in the U. S. alone, and this is bringing the entire North

### PLANNED NEW U. S. PAPER AND BOARD MACHINES CAPACITIES

End of	—In Tons—		
	Paper	Paperboard	Total
1948	11,801,500	11,438,820	23,240,320
1949	12,244,490	12,080,770	24,325,260
1950	12,508,601	12,108,670	24,617,280

Source—American Paper & Pulp Ass'n.; National Paperboard Ass'n., affiliated associations.

American capacity to 27,600,000 tons.

Editors based in Canada, in Eastern, Middle West, South and Pacific Coast sections of the U. S. have written from their base of operations, and after personally visiting more than 200 mills, these first hand reports:

### NORTHEAST U. S.

There is virtually no expansion scheduled in 1949 for mills in the Northeast that has not already been covered in last year's North American Review Number. However, this is a situation which could well change during the year. The period of pulp shortages and high pulp prices was not the healthiest for many of the mills in the Northeast area, and now that they can buy raw materials on a competitive basis it is very possible that a number of these mills will look more hopefully toward improvements. Certainly these conditions must be considered: 1. Many of these mills are due for modernization and re-engineering; 2. They can now purchase raw materials on a competitive basis; 3. They are faced with a return to competitive production. It would be fantastic to believe that none of the mills which fall into this category would take the necessary steps toward modernization.

A further interesting point in this area is the research taking place in the cooking of hardwoods and new sulfite cooking processes, and on groundwood processes taking advantage of improvements in bleaching. It is extremely likely that expansions and improvements will take place in the Northeast along these lines, but whether they will be taken by the larger integrated mills or some of the

smaller operations, or both, remains to be seen.

The changing situation was pointed up by announcement in late April that No. 1 paperboard machine at Covington, West Virginia, division of West Virginia Pulp and Paper Co., closed down indefinitely May 6 because of lack of demand for its product. Other operations, which include seven paper machines, two specialty board machines and two pulp mills, continue. No. 1 board machine had been making filled kraft liner board since early in the war.

As the picture stands now, there is little to add to the modernization moves reported in this department in 1948. These included the new machine and improvements at Hammermill, Erie, Pa.; new machine at W. C. Hamilton & Sons, Miquon, Pa.; the completion of the 200-ton sulfate mill by Brown Company, Berlin, N. H.; the renovated pulping operations and expansion of the pulp molding plant by B-F-D in upper New York State; and the new machine at Riegel Paper Co., Milford, N. J.

The improvements at the already new Gibraltar Corrugated Paper Company, North Bergen, N. J., were somewhat delayed but were expected to be completed by May of this year.

Some delay was also experienced in improvements at the mill of New York & Pennsylvania Co., Lock Haven, Pa., but now the new machine is adding 125 tons daily to the production.

International Paper Co. at Palmer, N. Y., has substantially increased bleached groundwood production, and the Fort Edwards mill of Scott Paper Company has considerable improvements under way in their pulping operations after machine installations there.

Westfield River Paper Co., with two mills in Massachusetts and two in Pennsylvania, is still planning a general program over a long period.

In Maine the Oxford Paper Co.'s mill at Rumford was coming to completion of a very sizeable expansion program which included a new machine and streamlined

**SURVEY OF U. S. MILLS' PAPERMAKING CAPACITY - ANNUAL BASIS**  
IN TONS  
(Made by American Paper & Pulp Assn., its Divisions and  
National Paperboard Assn.)

Grade of Paper	Capacity Increases - New and Rebuilt Machines							
	Capacity end of 1947	Increases during 1948	Capacity end of 1948	Increases during 1948	Capacity end of 1949	Increases during 1949	Capacity end of 1950	Capacity end of 1950
Fine	1,263,930	11,160	1,275,090	1,860	1,276,950	17,050	1,294,000	
Book	2,197,320	222,890	2,420,210	69,440	2,489,650	45,880	2,535,530	
Tissue	1,236,140	85,560	1,321,700	12,400	1,334,100	7,440	1,341,540	
Wrapping and Specialties	3,444,370	306,900	3,751,270	325,190	4,076,460	75,950	4,152,410	
Groundwood Papers	837,900	12,710	850,610	20,460	871,070	-	871,070	
Newsprint	831,400	80,290	911,690	-	911,690	117,800	1,029,490	
Miscellaneous	110,930	-	110,930	1,280	112,170	-	112,170	
Building Paper	1,160,000	-	1,160,000	12,400	1,172,400	-	1,172,400	
Total Paper	11,081,990	739,510	11,801,500	142,990	12,244,490	264,120	12,506,610	
Paperboard	9,200,100	678,600	9,878,700	641,950	10,520,650	27,900	10,548,550	
Net Machine and Building Board	1,389,000	171,120	1,560,120	-	1,560,120	-	1,560,120	
 Total Paper and Board	 21,671,090	 1,569,230	 23,240,320	 1,084,940	 24,325,260	 292,020	 24,617,280	

machine coating. And at Cumberland Mills the S. D. Warren mill had in operation its new recovery system.

Minor improvements, nonetheless, are more or less continuous in the Northeast and these are likely to increase because of the conditions noted above. Among the mills which have installed new equipment aside from machines are Hopper Paper Co., Reading, Pa.; Seaman Paper Co., Otter River, Mass.; Downingtown Paper Co., Downingtown, Pa.; Byron, Weston Co., Dalton, Mass.; and several others.

### THE MIDDLE WEST

In looking at 1948 here in the Middle West it is noteworthy that most developments included heavy expenditures for new steam producing facilities and all allied equipment like stokers, silos, water treatment plants, conveyors and ash handlers. Perhaps one plant superintendent spoke a fundamental truth recently when, in showing his new boilers, said, "here is the place a paper mill makes or loses money today."

Mead Corp., of Dayton, O., completed rebuilding No. 7 machine at Chillicothe, Ohio, added power at Manistique, Mich.

National attention was sharply focused on one new paper machine—Rhineland Paper Co.'s glassine Fourdrinier. By conventional listing, it is No. 7, but to hundreds who read about the national contest to name the machine it was known as the brother to the "Big Swede." Then when the official results were announced it became the "Ripco Maid"—a little sister, not a brother.

Rhineland thus became the largest producer of glassine at any single location. Beloit built the new machine. This was only a part of the program, which includes: new finishing room, new warehouse, water filtration, new stack, boiler house addition, and, of course, the adjacent new yeast plant sponsored by the Wisconsin Sulfite League, to make stock feed and dispose of spent sulfite liquor.

The first new fine paper in the Midwest in many years had its startup early in 1948 in Ohio at West Carrollton. The American Envelope Co.'s division, the

Moraine Paper Co., put into operation a rated 70 ton-per-day producer in one of its rebuilt 128-inch trim Fourdriniers.

The Moraine building itself, is something special. Windowless, of modern functional design, it is of brick and 550 feet long and 330 feet wide. All equipment is in continuous line with the whole operation on one floor. President Carlton W. Smith and his staff laid down one of the milestones for 1949 construction.

A strong modernization program was completed when Thilmany Pulp & Paper Co., Kaukauna, Wis., started up its new No. 10 machine in 1948. There was a lot of other equipment installed and part of

the program was a new boiler that will ultimately provide much of Thilmany's steam and electric power needs in the future.

Kimberly-Clark Corp. completed its two-machine book mill addition at Niagara, Wis., and Consolidated Water Power & Paper Corp. was running its fine new mill at Biron, Wis., housing its 14th machine. All its expansion was completed in 1947.

First Nekoosa-Edwards Paper Co. at Port Edwards, Wis., completed improvement of the building housing their paper machines and then followed through during 1948 by installing complete new Fourdrinier sections on machines No. 5 and 6. No. 4 was rebuilt earlier in the year. It turns out fine printing papers. Opened during the year was a new 110 by 130-foot finishing department. A new 125,000 lbs. steam per hour boiler by Combustion Engineering Co. was installed.

Hoberg Paper Mills, Inc., Green Bay, Wis., introduced to its sulfite operation a new hypochlorite continuous bleaching operational equipment.

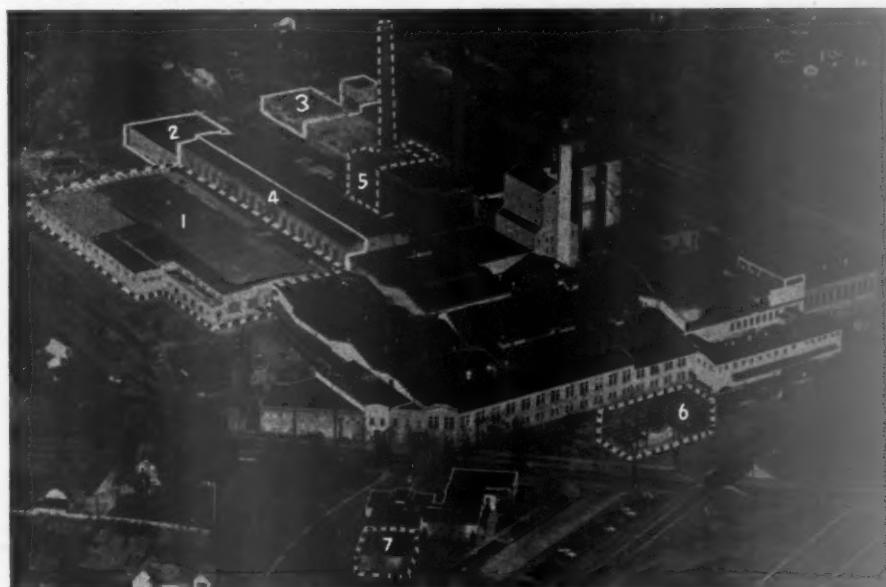
A new boiler house, boilers, stokers and coal handling equipment were all a part of the expansion at Ward Paper Co., Merrill, Wis.

Another boiler house project for the past year was at the Eddy Paper Co., where the plant aimed for double capacity with a new Langston corrugating machine that will operate close to 500 fpm. The boilers will use oil for fuel. New offices and other plant facility are a part of the program.

Up at Menominee, Mich., the Marathon

SOME THINGS HAVE BEEN ADDED at Rhinelander Paper Co., as this air view from 1,000 ft. altitude shows. The white numbers show the major units added, as follows:

1. New finishing room—train shed and truck loading docks.
2. New warehouse.
3. Water filtration plant.
4. Location of new No. 7 paper machine.
5. Boiler house addition and new stack.
6. Fodder yeast plant (owned by group of sulfite mills in Wisconsin and Michigan, making yeast from 50% of Rhinelander's effluent.)
7. Addition to main office building.



Corp. was completing a program that included a new Yankee Fourdrinier for its Waxtex and new supercalender stacks. It was a rebuilding proposition for the Fourdrinier machine, plus new wet end, dryers and other equipment. The stock preparation equipment was all improved and modernized.

The Green Bay Paper & Pulp Co., Green Bay, Wis., began work on a new \$1 million semi-chemical pulp mill and board mill to utilize hardwoods.

National Container Corp. accomplished much in its 1948 improvement program and its National Container of Wisconsin plant at Tomahawk was a part of it. A \$350,000 plant in a 700-foot building is the semi-chemical unit. The box plant was opened during the year. New boilers, coal and ash handling, paper machine revamping were all apart of the progress.

In the field of container expansion the National Container Corp. leased a building in Milwaukee and set up a division that will begin operation in 1949. This follows National's acquisition of the Tomahawk Paper Co. and will operate under the same divisional management.

In the meantime, the Ottawa River Paper Co., Toledo, O., started planning for its new corrugated box plant at Flint, Mich.

Looking ahead as 1948 expansions became history was the important announcement by St. Regis that it will expand its Panelyte plastic divisions by operating in Kalamazoo. St. Regis will take over the Time, Inc. coating mill during 1949. St. Regis previously entered Kalamazoo by purchasing the former Bryant Paper Co. mill from Time, Inc. Panelyte will be a big addition to mid-West facilities.

Hawthorne Paper Co., Kalamazoo, Mich., practically completed its improvement program with the installation of two new boilers. Beloit Fourdrinier section for No. 1, Westinghouse turbine for No. 2 driving, Bird screens and Savealls and many others.

In mid-year, Lee Paper Co., Vicksburg, Mich., began erecting assembled units that enabled them to rebuild sections of No. 1 and No. 2 machines. Dryer sections were improved, the Fourdriniers were replaced with two new sections and one press section was added. Work included many interlocking improvements in building and piping.

Practically completed during the year is the 50 ton-per-day newsprint mill, the Gary Paper Mills, Inc., Gary, Ind. The company will supply five midwestern newspapers which form the company ownership. De-inked pulp will be used. The first machine will be a 108-inch trim unit.

Early in 1948, the Chillicothe Paper Co., Chillicothe, O., completed its long-range expansion program. Included in the expansion: new Rice-Barton 175-inch width Fourdrinier, Valley Iron headbox and slice, Bird Dirtecs, new boiler and steam turbine and many others.

It may not be strictly classifiable under "expansion," but an interesting and im-



REPRODUCTION of a painting hanging in Neville Public Museum in Green Bay, Wis., by Chris Borggren, native of Denmark and member of Kimberly-Clark Corp.'s staff, engineering department, at Neenah, Wis.

This picture typifies expansion and modernization of the Wisconsin pulp and paper industry—in it is a fusion of mill buildings built by Kimberly-Clark over 75 years. It is really a combination of mills at different sites—those at the left are old, those at the right are latest in design.

portant transaction in 1948 was the purchase of the Wausau Paper Mills of Brokaw, Wis. An 80-ton sulfite pulp and paper mill, the new organization is headed by D. Clark Everest.

In the mid-West it was a matter of subtract and add in 1948 for the Champion Paper & Fibre Co., at Hamilton, O. Paper-making machines were moved from Hamilton, O., to Houston, Texas., but on the expansion side of the ledger was the development for greater production in several specialty departments, including Champion's "Kromekote" papers.

The River Raisin Paper Co., Monroe, Mich., completed its postwar expansion which involved rebuilding of two machines, new Monel stock lines, new finishing room equipment and filtering system.

The Fort Wayne Corrugated Paper Co. plant at Hartford City, Inc., spent another \$750,000, bringing its development to \$3,000,000. New equipment includes boilers and fuel and ash systems.

They were plenty busy at Sutherland Paper Co., Kalamazoo, Mich., during 1948 as the bulk of the work was accomplished in the nearly \$3,000,000 new building and expansion for a 136-in. paper machine, power house and machinery.

One of the biggest projects in the mid-West was the completion of the Michigan Carton Co.'s new \$6,000,000 board mill at Battle Creek, Mich. It is an entirely new unit, buildings, machine and all equipment. It follows close upon the startup of the new Alton Box Board machine at Alton, Ill., and these are two of the outstanding board machines in the world.

#### SOUTHERN U.S.

When the post-war expansion of existing mills and establishing of new producing units was in full bloom in the South there was a consensus of opinion that this would all be over with the close of 1948 after which the industry would settle down to the adjusted picture until the next round came.

This has not proven to be the case.

First, some of the post war expansion did not get completed by the close of the year; some companies withheld action; and, there has been introduced a new note involving the pulping of hardwoods.

By this we mean that the southern field has not attained a status quo position, but that there is still something to be revealed in the matter of woodpulp production either for paper or rayon. Despite the very definite tapering-off in demand early this year, there was still projects ordered and not completed for many mills which may take longer to complete, but will not be wholly abandoned.

Over in Texas, the Champion mill at Pasadena has provided space and new groundwood supplies for two machines moved down from Hamilton, and though two more machines may move, the time will be determined by conditions. At Dallas, the Fleming Brothers have added a cylinder machine to produce more paper. At Lufkin, the Southland Paper Mills, Inc., completed a pulp mill during the anguish of war conditions and expansion of newsprint during the more harsh post-war situation. Southland, during 1948, called off its third paper machine installation to wait for further growth of demand.

There still impends the possibility of a new pulp mill at Evadale, where Champion is interested, but this project is completely tied in with waste utilization.

The Louisiana mills consume a large percentage of Texas pulpwood. At Elizabeth, the Calcasieu Paper Co. stood for many years as an old mill amply backed by forest supply. Now, in new hands, it is coming into increased production. Increased production was coming from the International Paper Co. mills at Springhill and Bastrop, La., as well as at Camden, Ark. Arkansas will have added production in the future at Crossett, where a new paper machine is being installed.

For the rest of Louisiana both Brown Paper Mill Co., at Monroe, Southern Advance Bag Co., at Hodge, and Gaylord Container Corp. at Bogalusa, have or are increasing production.

In Mississippi, Johns-Manville has its woodpulp wall board plant in production, International's mill at Moss Point has increased its production, and Masonite, at Laurel, has also advanced. The hardwood sulfate pulp mill for rayon and plastics planned by International at Natchez is going ahead apparently despite slow-up of the production.

In Alabama, a project for 50% increase of capacity was underway for Hollingsworth & Whitney in Mobile. The Gulf States Paper Corp. started up its new machine early in 1949. Coosa River Newsprint Co. had its project well underway at Childersburg, for completion in Jan., 1950.

There was serious talk of the revival of the mill project at Selma, endorsed by forest spokesman as sound, and the rayon mill at Demopolis, said to hinge on entry of vital Italian machinery. But a quietus was on all such talk this Spring due to new conditions. The expansion of Mobile

Paper Mill and International Paper Co. plants have been reported.

Over in Florida, the new Alabama Pulp & Paper Co. and the expanded Florida Pulp & Paper Co. have been fully incorporated into the St. Regis Paper Co., and their addition to production absorbed. There have been no recent reports as to possible establishment of another St. Regis mill at Valdosta, Ga., adjacent to the Suwanee Forest, under lease from Superior Pine Products.

Brooks Scanlon, Inc., have said nothing further about revival of the projected mill at Foley, Fla., and the rumor of a project at or near Gainesville was just that. Of course, the Palatka mill of Hudson Pulp and Paper Co. was early into post-war production. National Container Corp. at Jacksonville, continues improvement, and St. Joe Paper Co. has entered the advancement lists with the first fully brown stock washing job South. Container Corp. of America, at Fernandina, has completed its pulp expansion and new paper machine.

St. Marys Kraft Co., at St. Marys, Ga., will complete its expansion work by June, including added capacity, and the new mills of Macon Kraft, Macon, Ga., and Southern Paperboard Corp., Port Wentworth, have been operating long enough to settle down into routine. The Austell Paperboard Co., Austell, Ga., will add 65 tons of paper daily to the South's total at mid-1949. Sonoco Products at Hartsville, S. C., completed installation of its 8th machine and hardwood pulping facilities.

Union Bag completed installation of its 5th and post-war machine long ago, but of course improvements continue. This is also true of West Virginia's post-war machine, but this company was looking into the possibilities of a hardwood pulping mill.

In its 50th anniversary, International Paper Co. said its Southern Kraft Division would add 200,000 tons per year to paper production facilities in 1948 and 230,000 tons in 1949. This company has never

performed less than it states, though conditions now may mean curtailment. The Mead Corp. plant at Kingsport, Tenn., expanded soda pulping at Harriman, Tenn., added a Fourdrinier wet end on a board machine.

Buckeye Cotton, at Memphis, expanded its pulp capacity and increased its cotton linters paper products by 50 tons per day with another machine.

The Southern Forest Experiment Station placed the southern mill capacity (pulp) at the close of 1948 at 18,500 tons per day and James H. Allen, based on a canvass of companies, placed the figure at 19,500 tons per day.

Modernization and expansion in the Southeast still pending aimed chiefly at pulpwood procurement, power facilities, and recovery systems in the mill. Power capacities are still being increased at several mills.

Chesapeake-Camp Corp., Franklin, Va., has installed a new boiler and recovery system just now coming into operation. Chesapeake Corp. of Virginia, West Point, Va., has installed a new recovery unit, precipitator, and new acid-proof chimney. Here, too, there are improvements in wood handling, with two new chippers and new concrete chip bins. A new stainless steel head box has been installed at the machine.

Brunswick Pulp & Paper Co., Brunswick, Ga., is completing a \$5,000,000 expansion program which includes recovery unit, waste disposal units, bleach plant, new digesters, chipper, lime kiln, and new chain-belt conveyors.

Expansion in South is going on—but at a slower pace, a smaller scale.

#### PACIFIC COAST STATES

With the vast timber resources which are available, especially in "clean-up" logging and closer utilization of harvested fiber, the expansion of the pulp and paper industry in the Far Western region of the U. S. might be slowed up—but not

brought to a standstill—by the emergence of the much-heralded "buyer's market."

There were still two important projects yet to be completed in the spring of 1949 and it would be later in the year before either of them started producing. These were:

(1) Weyerhaeuser Timber Co.'s 150-ton kraft containerboard mill at Springfield, Ore., just one unit in a varied program for full use of wood resources in that area (in that county there are more sawmills than anywhere else in the world—over 100—with a huge reservoir of wood "leftovers").

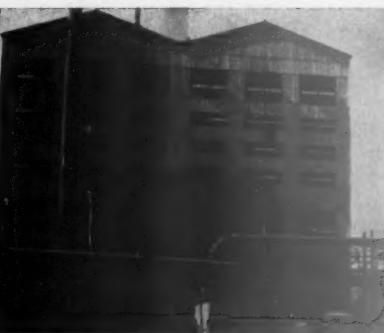
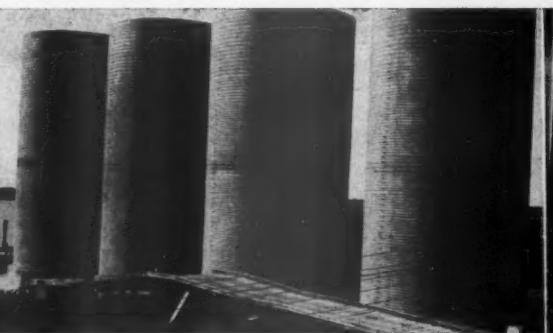
(2) Fibreboard Products Inc.'s 260-ton two-machine mill at East Antioch, Calif., its new San Joaquin division, was also nearing completion and here, too, its wood supply were being drawn from northern California sawmills and a hitherto-untapped source. Chip plants at the sawmills and open storing of chips at East Antioch were among innovations here for a kraft pulp mill and a semi-chemical pulp mill.

A number of Coast pulp mills were still making improvements in efficiency and continuing to operate at seven days a week, despite the slow-down or even temporary shutdowns of other mills in the east during the spring of 1949.

Puget Sound Pulp & Timber Co. at Bellingham added to power plant and screening capacities and Rayonier at Shelton, Wash., ordered a new hydraulic whole log barker and whole log chipper, which, on the basis of other mill's experiences, could increase their yield of pulp in a given supply of wood by over 15% or, if they chose, merely reduce the consumption of wood that much. Longview Fibre Co. was pushing to completion an extensive series of improvements. Soundview Pulp Co., biggest sulfite pulp mill in the world, had pushed its capacity to over 550 tons and Everett Pulp & Paper Co. completed power plant and washing capacity improvements.

In the Crown Zellerbach mills, the

VIEWS AT CHESAPEAKE CORP. OF VA. Left, Long shot of plant. Pulp mill at left, recovery units and giant stack in center. New stack (highest showing) is 250 ft. high and 17 ft. diameter inside, and is lined with acid-proof tile. Center, Four concrete chip bins. Right, The new Combustion Engineering recovery system and Keppers precipitator.



The enlarging and modernizing program at The Chesapeake Corp. of Virginia at West Point, Va., is moving along at a well regulated clip. The modernizing takes in the whole mill from a complete re-building of the yard wood handling equipment to the modernizing of the

Pusey and Jones machine.

Improvements have been extensive in the pulp mill and power plant. The second Combustion Engineering recovery unit is ready to go into production. Recovery now consists of two C-E units with two electric dust precipitators. The old

recovery furnaces will be scrapped. A 250-ft. tall, 17-ft. diameter chimney lined with acid-proof tile will handle the gases from all the mill boilers. Pictures taken at West Point by **PULP & PAPER** are shown on this page.

greatest expansion program in its history had been brought virtually to a close and Vice President Frank Youngman in matter-of-fact frankness set the goal for the year 1949 when he said "unfilled orders honeymoon is over and now we have to get returns from our large outlay or it is a bad investment. For the year which ended April 30, 1949, \$15,000,000 was budgeted for expansion in Crown mills, on top of \$50,000,000 previously spent in post-war additions.

At Camas, a modernized wood preparation plant was still being completed in 1949 which might save around 5% of their wood supply usage—no small item in such a big mill. Its No. 15 machine, the all-purpose 152-in. Fourdrinier started up in April. A new 165-ton kraft mill, in addition to the previous 185-ton kraft plant, a 150-ton 8-stage kraft bleach plant, new kraft recovery and power plant, new screen room and new finishing and converting equipment were put into operation at Camas. Other machines were being speeded up.

The big job of converting Crown's West Linn mill to coated paper with a new and a rebuilt machine was over the previous year but improvement work continued on other machines. At the Port Townsend kraft mill, Crown was adding a new wood plant with Bellingham-type barker this year, after screening additions, a new digester and new bag plant.

On Jan. 5 of this year St. Regis started up its high-speed 180-inch Pusey & Jones Fourdrinier and put into operation its new paper mill at Tacoma, Wash., where it had previously only made pulp. Half of its 300 tons of kraft pulp was still being bleached and marketed.

Pacific Coast Paper Mills of Washington at Bellingham started up a new No. 2 Fourdrinier of 18 tons capacity on tissue, replacing a 7-ton-a-day cylinder operation and added a late Hydropulper, its second. It installed previously one of first Hydropulpers in the country. A Valley Iron Works headbox, new Beloit Yankee drier were recent additions here.

On March 18 last year Fernstrom Paper Mills at Pomona, Calif., started up its Black-Clawson 160-inch Fourdrinier on fast tissue, completing a \$2,000,000 expansion.

Weyerhaeuser Timber Co. brought into production in late 1948 its 200-ton market kraft pulp mill with Rice-Barton machine at Longview, Wash., and also its MgO (magnesia) sulfite pulp recovery and power plant which is now the magnet of attention of the entire sulfite world, awaiting results of revolutionary new processes.

At Ukiah, Calif., Masonite was readying to start building its biggest wood-fiber hardboard plant outside of the one at Laurel, Miss. U. S. Gypsum added a 160-inch 200-ton board machine at South Gate, Calif., said to be the biggest machine of its type. At Forest Grove, Ore., work was under way on a board mill using wood pulp by Stimson Lumber Co., similar to the one started up over a year ago at Shelton, Wash., by Simpson Logging Co.'s new Woodfiber Division. Fir-

Tex Insulating Board Co. at St. Helens, Ore., increased output 10%. Angelus Paperbox Co. at Los Angeles completed its expansion.

Other additional mills which had been rumored in California and Oregon were definitely on the shelf as this issue went to press.

Hydraulic barking, the great wood-saver of the Far West, was being introduced in early 1949 to the mills of Inland Empire Paper Co. at Spokane and the Spaulding Pulp & Paper Co. pulp mill at Newberg, Ore., and this was of course, a potential booster of capacity. The wood resources of the Grays Harbor region were being scrutinized very closely by more than one group with adequate money behind them for possible pulp expansion, but in Montana, one or two projects talked of were still quite a ways from taking on realistic shape.

A new plant was completed at San Leandro, Calif., for the former Emeryville, Calif., operations of Western Waxed Paper Co. Longview Fibre Co. started up a new corrugated box plant at Los Angeles.

So, steadily, it might be said even relentlessly, growth of the Pacific Coast industry and its new divisions, pushes onward and upward, whether disinflation or inflation be the current market trend, with efficiency as the important criterion for either new or old operations.

## CANADIAN EXPANSION

The farthest west and the farthest east were the scene of most of the expansion in Canada's pulp and paper industry during the past year, with most of the large-scale construction being centered in British Columbia and New Brunswick.

For the first time, Canada is now able to include Newfoundland in the indus-

trial family as a result of the annexation negotiations being completed this spring, and it is noteworthy that Newfoundland, too, saw substantial development in 1948, at major operating companies there — Bowater's and Anglo-Newfoundland — Bowater's added a 284-inch newsprint machine, making it a 1,000-ton-a-day mill.

In New Brunswick most of the new construction was concentrated in the program of the Fraser organization, whose operations will be augmented by a craft mill at Newcastle and bleach plant at Edmundston.

With completion of the LongLac Pulp & Paper Co.'s 300-ton bleached sulfate mill at Terrace Bay last fall, the spectacular expansion along the northern shore of Lake Superior which began with the Marathon project and continued with Brompton's conversion of the Lake Sulphite Co. mill into a modern kraft producer was terminated for the time being, and the only entirely new mill projects involving the expenditure of many millions of dollars were under way on the west coast.

Nanaimo Sulfate Pulp Ltd., the new bleached kraft subsidiary of the H. R. MacMillan Export Co., is rapidly taking shape on the Vancouver Island shore of Northumberland Channel, a few miles south of Nanaimo. Up at Port Edward, seven miles south of Prince Rupert, preliminary construction in connection with Columbia Cellulose Co., subsidiary of Celanese Corp. of America, is now in progress. Now that Canadian Western Lumber Co. has received its government forest management license guaranteeing a supply of timber in perpetuity, it is expected that detailed plans for its proposed kraft and newsprint mill at Duncan Bay, near Campbell River, on the east coast of Vancouver Island, will soon be

(Continued on page 178)



**REALISTIC MODEL** of the proposed Port Edward high alpha pulp mill of Columbia Cellulose Co., subsidiary of Celanese Corporation of America, which is being built at Port Edward, B. C. Printing at top left says: "Here logs are (to be) processed into wood pulp and then converted into purified cellulose for plastic and textile uses." Card at lower right says: "Cellulose Plant of Columbia Cellulose Co., at Watson Island, near Prince Rupert, B. C."

# PAYROLL STATISTICS

## Discussion of Labor Situation

With the fate of the Taft-Hartley law still a question mark as this Review Number goes to press, a discussion of the labor situation in the pulp and paper industry is difficult. But it can be said definitely that reactions to the eventual new U. S. labor bill, when it does emerge, are likely to be less notable in this industry than in many another. For, in 1948 and thus far in 1949, the pulp and paper average wage stayed ahead of the national average, and the "climate" was reasonably good.

One of the significant developments in 1947 and 1948 as far as labor is concerned in the pulp and paper manufacturing industry of the United States is the evidence that its average hourly earnings in those years went ahead of the average for all industries of the nation.

Up to 1947, the average hourly pay of the pulp and paper industry was slightly behind that of all industries. In the war years, it could hardly be expected to keep pace with the "cost-plus" and other favored wartime industries.

In 1946, the average hourly pay of pulp and paper workers passed the dollar mark to \$1.04, and by December it was \$1.12, but still about three cents behind the national average.

Then in June, 1947, it spurted to \$1.231,

a half cent ahead of the national average and by Dec., 1948, it was \$1.408, as compared with \$1.376—more than three cents ahead.

The average hourly pay in this industry is now twice what it was in early 1940 as shown in the following table:

### TREND IN AVERAGE HOURLY EARNINGS U. S. PULP AND PAPER INDUSTRY

#### vs. U. S. FACTORY AVERAGE

(Source: U. S. Bureau of Labor Statistics)

	Pulp & Paper	U. S. Factory
	Hourly Earnings	Hourly Earnings
June 1939 .....	\$ .618	\$ .631
Dec. 1939 .....	.631	.652
June 1940 .....	.644	.662
Dec. 1940 .....	.660	.676
June 1941 .....	.716	.732
Dec. 1941 .....	.738	.783
June 1942 .....	.797	.845
Dec. 1942 .....	.829	.907
June 1943 .....	.851	.959
Dec. 1943 .....	.863	.995
June 1944 .....	.884	1.017
Dec. 1944 .....	.904	1.040
June 1945 .....	.906	1.058
Dec. 1945 .....	.945	.994
June 1946 .....	1.038	1.084
Dec. 1946 .....	1.119	1.148
June 1947 .....	1.231	1.226
Dec. 1947 .....	1.297	1.278
June 1948 .....	1.368	1.316
Dec. 1948 .....	1.408	1.376

An annual feature of this Review Number has been the comparisons of payroll data among the regions of the industry in the United States. Figures shown in this section, of course, were gathered before any of the spring bargaining conferences may have changed the situation.

The Pacific Coast pay rates continued in 1948 far ahead of those of the industry in any other region of the world. However, cost of living in some Pacific Coast centers also were officially rated among the highest rates in the country and the world, for that matter.

Hourly earnings on the Pacific Coast averaged \$1.76 for all employes in pulp and paper production (not converting) in 1948 and this was 35 cents an hour higher than the average for all other pulp and paper regions of the U. S. It was more than double the rate during immediate pre-war years on the Coast.

As for the weekly earnings average, the Coast was still high—\$68.46 per week or \$9.41 higher than the average for all other U. S. regions, despite the fact that weekly hours on the Coast averaged less than 39, more than three hours less than the average elsewhere.

#### Southern Wages Now High

It is interesting to note that the Southern region—from Arkansas and Louisiana

### UNITED STATES PAYROLLS

#### Average Hourly Earnings in Cents of Productive Employees (Exclusive of Converting Employees) in Pulp and Paper Manufacturing.

(Source: Calculated from tables received from A.P.P.A.)

	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
	June to December Inclusive										
Pacific Coast .....	79.6	79.8	83.8	97.7	106.9	114.7	118.6	117.2	139.3	160.9	1.760
Other Regions .....	61.3	61.6	65.0	72.6	81.2	86.5	88.9	90.0	108.5	127.0	1.406
New England .....	60.8	61.2	64.0	71.5	79.3	84.0	86.5	90.8	107.2	124.9	1.371
Middle Atlantic .....	63.9	64.3	67.6	76.2	85.2	89.4	91.9	96.6	110.3	128.0	1.400
Lake States .....	65.0	65.6	68.0	74.7	82.1	86.0	89.1	93.5	110.5	130.0	1.451
Central (North) .....	62.6	62.4	64.4	71.9	78.7	83.1	86.0	92.7	109.2	127.3	1.369
Central (South) .....	54.9	55.1	59.5	66.5	76.2	79.5	83.2	87.1	99.4	114.5	1.315
Southern .....	57.3	55.9	61.7	74.0	84.2	86.0	92.7	97.3	113.3	132.0	1.472

### UNITED STATES PAYROLLS

#### Average Weekly Earnings of Productive Employees (Exclusive of Converting Employees) in Pulp and Paper Manufacturing.

(Source: Calculated from tables received from A.P.P.A.)

	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
	June to December Inclusive										
New England .....	\$22.39	\$24.27	\$24.35	\$29.78	\$32.63	\$38.59	\$41.21	\$42.94	\$46.15	\$52.76	\$58.95
Middle Atlantic .....	24.04	26.74	26.29	31.97	35.84	41.11	43.44	45.64	47.26	55.06	59.64
Lake States .....	25.17	26.62	27.52	31.18	34.15	39.15	41.48	43.34	44.97	53.81	58.62
Central (North) .....	23.41	25.23	26.03	31.04	31.73	37.19	40.05	41.93	46.73	54.96	59.55
Central (South) .....	20.79	21.85	23.25	27.22	30.34	34.32	37.42	36.74	39.48	45.45	50.36
Southern .....	21.39	21.82	24.52	28.88	34.71	38.43	43.68	43.13	45.69	54.00	63.30
Pacific Coast .....	26.49	30.12	32.33	36.54	43.71	50.40	51.66	49.63	52.62	61.71	68.46

#### WHAT EACH REGION COMPRISES

In the tables used in this section comparing wage data in different regions of the U. S., information was obtained from nearly all states making pulp and paper. Here are states included in each of the regions mentioned in these tables:

NEW ENGLAND—Conn., Maine, Mass., N. H. and Vt.

MIDDLE ATLANTIC—New Jersey, N. Y. and Penn.

LAKE STATES—Mich., Minn. and Wisconsin.

CENTRAL STATES or CENTRAL NORTH—Ill., Ind. and Ohio.

CENTRAL ZONE or CENTRAL SOUTH—Del., Tenn. and West Va.

SOUTHERN ZONE or SOUTH—Alabama, Ark., Fla., Louisiana and Miss.

PACIFIC COAST—Calif., Wash. and Ore.

across to Florida—is now the second highest average wage rate region of the pulp and paper industry. Here the rate has climbed to \$63.30 a week, just about \$5 off the Coast average and about \$4 higher than the next highest regions, the Middle Atlantic and Central States. The hourly average rate in that Southern belt is also in No. 2 place, being \$1.47 or about 29 cents under the Pacific Coast. Our tables show the Southern section and the Middle or Central South were the lowest paying sections in the years before the World War and it perhaps will come as quite a surprise to now find them near the top.

#### Average Earnings and Hours of Work of Productive Employees of U. S. Pulp & Paper Industry (Exclusive of Converting Employees)

	June to Dec. 1948, Inclusive		
	Ave. Weekly Hours	Ave. Hourly Earnings	Ave. Weekly Earnings
Pacific Coast .....	38.9	\$1.760	\$68.46
Other Regions (Excl.			
Pacific Coast) ....	42.0	1.406	59.05
New England .....	43.0	1.371	58.95
Middle Atlantic ....	42.6	1.400	59.64
Lake States .....	40.4	1.451	58.62
Central States ....	43.5	1.369	59.55
Central Zone .....	38.5	1.315	50.36
Southern .....	43.0	1.472	63.30

Source: Calculated from tables received from A.P.P.A.

This spring **PULP & PAPER** talked with John P. Burke, president of the International Brotherhood of Pulp, Sulfite and Paper Mill Workers (AFL) whose headquarters are at Fort Edwards, N. Y. Because of the spring bargaining conferences in Portland, Ore., Mobile, Ala., etc., affecting big industry groups, Mr. Burke was loathe to make a statement for publication as to the attitude of his union in the face of current readjustments in the industry. But it appeared to be plain from his comment that present thinking of labor is about like this:

It is aware of the changing conditions in the industry; it is also aware that some segments of the industry will be hit harder than others by the return to a buyer's market; and, therefore, the idea will be to feel things out, see what happens, and trim the strategy accordingly.

#### "REAL" WEEKLY WAGES IN THE PAPER INDUSTRY



THIS "REAL" WEEKLY WAGES CHART prepared by APPA shows how much the actual standard of living of pulp and paper mill workers in the United States is—in other words, how much wage rates have increased over and above the actual cost of living. The index of real weekly wages is computed by dividing the index of actual weekly wages by the index of the cost of living. The chart shows that real wages rose steadily from 1934 to a wartime peak in 1945. The removal of price controls in 1946 brought an increase in the cost of living which brought real wages down temporarily. Wage increases returned the index to its wartime peak level by June 1947.

Bargaining conferences were to come up for the entire Pacific Coast industry Apr. 25, for the Canadian mills in that month; Great Northern Paper Co. on April 26th; Book and Bond division of

#### Production Workers and Wages in U.S. Pulp, Paper and Allied Products Industries

Year	Ave. Number of Wage Earners (Thousands)	Total Dollar Wages (Millions)
1899 .....	94	36
1909 .....	145	68
1919 .....	208	213
1929 .....	233	287
1939 .....	265	310
1947 .....	391	953
1948 .....	394	1,063

Source: Bureau of Labor Statistics, U. S. Department of Labor.

International Paper Co on May 2; and Southern Kraft division of International on May 9.

The Pulp Workers union seemed fairly resigned to the fact that the proposed substitute for the Taft-Hartley law had suffered a set-back and that there would be considerable pulling and hauling yet to come.

Some of the results of the bargaining table across the nation early in the year, all AFL contracts: 7½% general increase at Fonda Container, St. Albans, Vt.; two to seven cents an hour at Bridgeport Paper Box, Bridgeport, Conn.; five cents for ten plants of Robt Gair Co., Inc.; ten cent general increase at Central Carton Co., Cincinnati, O.; five cents at Inland Container, in Macon, Ga.; negotiation of a pension plan at Hinde & Dauch, Newark, N. J.; extra hour's pay at Southern Advance Bag & Paper Co., Hodge, La. It should be observed, however, that all

#### CANADIAN PULP AND PAPER PAYROLL DATA

	Total Employees	Employees On Salary	Average Salary	Employees On Wages	Average Wage	Wage Index*	Cost of Living Index*	Total Salaries-Wages
1920 .....	31,298	2,669	\$2,449	28,629	\$1,352	109.5	150.5	\$ 45,253,893
1939 .....	31,016	4,382	2,482	26,634	1,271	102.9	101.5	44,737,739
1940 .....	34,719	4,630	2,526	30,089	1,475	119.4	105.6	56,073,812
1941 .....	37,154	4,970	2,600	32,184	1,577	127.7	111.7	63,677,818
1942 .....	38,002	5,071	2,685	32,931	1,701	137.7	117.0	69,656,393
1943 .....	37,020	5,384	2,723	31,636	1,787	144.7	118.4	71,199,422
1944 .....	37,896	5,488	2,846	32,408	1,858	150.4	118.9	75,833,408
1945 .....	39,996	5,981	2,803	34,015	1,813	151.7	119.5	80,462,644
1946 .....	44,967	6,910	3,033	38,057	2,103	170.3	123.6	101,364,636
1947 .....	49,946	7,706	3,411	42,240	2,443	198.7	135.5	129,477,995
1948 ** .....	52,000	.....	.....	.....	.....	.....	.....	\$136,000,000

Woods labor not included.

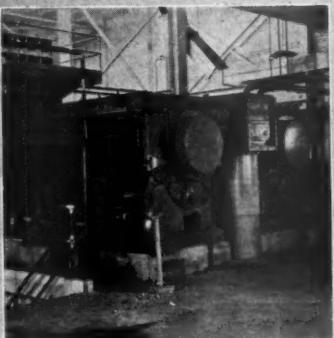
\*Wage and cost of living indexes: 100 equals 1935-39 average.

\*\*Estimated.

Source: Dominion Bureau of Statistics.

# BIRD MACHINERY

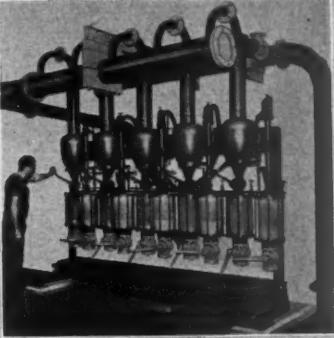
for the making of Better Pulp And Paper And More Of It  
Per Day At Lower Cost Per Ton



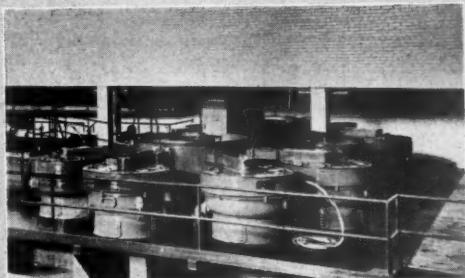
BIRD SCREENS



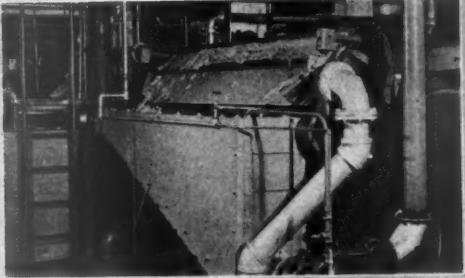
JONSSON SCREENS



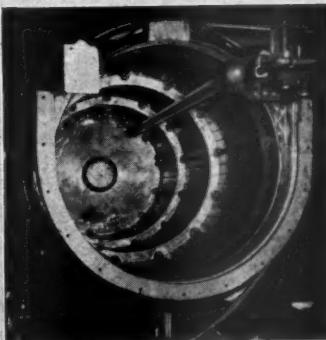
DIRTECS



BIRD CENTRIFINERS



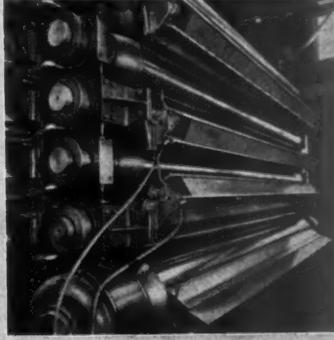
BIRD SAVE-ALLS



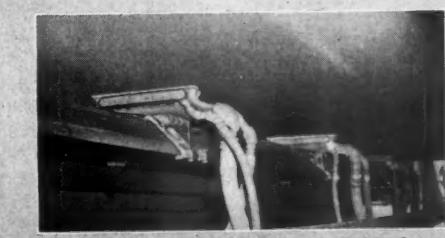
BIRD OSCILLATING SHOWER  
PIPES



BIRD CONSISTENCY  
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these contracts were being negotiated in January or earlier, before the shape of current events was plain. Some of the above plants are converting and box plants and their rates generally have averaged lower than in the primary pulp and paper mills over the country.

Certainly pension plans were going to be an increasingly important part of labor-management relationships. Rayonier, Inc., put in a pension plan early this year, and Union Bag & Paper Co. added itself to the list of paper companies which have set up private pension plans. Labor characterized the latter's as comparing "very favorably" with the better plans in the industry.

The AFL unions continued to win election contests over CIO in this industry, more recently at the Time, Inc., coating mill in Kalamazoo and at Inland Container in Macon, Ga.

#### What Is Fair Labor Law?

There has been issued a questionnaire which may prove usable by labor relations men in the industry in ascertaining just what their employees consider a fair labor law or fair labor practices. It was originated by Stephen Goerl of Stephen Goerl Associates, New York advertising and public relations counsel which has several paper company clients. Mr. Goerl was formerly advertising director of Bulkley, Dunton and still handles their account. Some questions are as follows and are supposed to be answered *yes* or *no*:

1. Do you believe that labor laws should, in general, preserve the employee's right to strike?

2. Do you believe labor laws should give the President of the United States the right to seek, through courts of law, to delay a strike that would cause a national emergency endangering the health and safety of the entire country?

3. When two or more unions are fighting each other over who shall do a job or who shall represent the employees, and a strike is called to compel an employer to give to the members of one union the work or recognition being given to the other union—that is a jurisdictional strike. Should labor laws prohibit such strikes?

4. Should labor laws prohibit secondary boycotts—that is, prevent an employer and his employees, where there is no labor dispute, from being damaged by a union seeking to coerce another employer having a labor dispute?

5. Should labor laws provide that an employer cannot deduct union dues or assessments from wages unless the employee gives his personal O.K.?

6. Do you believe labor laws should see to it that both employers and unions be required to bargain in good faith?

7. Should labor laws give to both employees and employers the freedom to express their own points of view on employee relations problems — provided such views, or arguments, or opinions do not promise bribes or threaten reprisals?

8. Should labor laws protect the employee against unfair practices by unions and management?

#### CANADIAN INDUSTRY PAYROLL DATA In Pulp and Paper Mills

	No. of Employees Dec. 1 1948	Weekly Salaries and Wages Dec. 1 1948	Average Weekly Salaries and Wages		Index Numbers based on June 1, 1941 as 100 p.c. Employment Payrolls	
			Dec. 1 1948	Dec. 1 1947	Dec. 1 1948	Dec. 1 1947
Maritime Provinces	6,465	306,808	\$47.46	\$43.00	123.0	221.7
Quebec	39,535	1,992,718	50.40	45.77	132.3	228.0
Ontario	52,267	2,502,257	47.87	43.36	150.6	237.5
British Columbia	9,817	516,856	52.65	47.01	150.5	241.1
New Brunswick	4,114	215,218	52.31	46.63	121.5	229.0
Manitoba	4,164	181,070	43.48	39.10	146.6	221.0

Source: Canadian Department of Labor.

#### STATE OF OREGON

Year	Payroll	Work Days	Approximate Number Employees
Fiscal Year 1927-1928	\$2,691,220.18	581,833	1,939
Fiscal Year 1928-1929	2,946,218.92	640,724	2,136
July to Dec., 1931, Inc.	1,017,435.13	235,114	1,566
Calendar Year 1932	1,896,692.09	504,311	1,681
Calendar Year 1933	1,819,904.95	535,789	1,786
Calendar Year 1934	2,577,436.84	700,842	2,336
Calendar Year 1935	2,984,889.22	778,547	2,837
Calendar Year 1936	3,578,624.01	839,063	2,697
Calendar Year 1937	4,298,917.22	857,696	2,861
Calendar Year 1938	3,207,313.93	596,405	2,052
Calendar Year 1939	3,089,061.69	580,161	2,044
Calendar Year 1940	3,910,458.40	674,075	2,338
Calendar Year 1941	4,800,939.96	742,011	2,577
Calendar Year 1942	5,465,656.77	759,156	2,622
Calendar Year 1943	6,372,006.72	769,963	2,695
Calendar Year 1944	7,028,481.01	877,478	3,006
Calendar Year 1945	7,948,596.83	673,787	2,945
Calendar Year 1946	9,760,511.00	730,969	3,233
Calendar Year 1947	11,978,117.03	942,654	3,331
Calendar Year 1948*	13,228,859.00	956,305	3,329

Sources: Data from Oregon State Accident Commission plus information we obtained from certain mills.

\*Statistical figures not available from Spaulding Pulp Co.

Data from July 1, 1929, to June 30, 1931, not available.

#### STATE OF WASHINGTON PAYROLLS AND HOURS WORKED

##### PULP AND PAPER MANUFACTURING

Year	Payroll	Workmen Hours	Increase or Decrease Compared With Preceding Year	
			Payroll	Hours Work
1927	\$4,855,526	7,710,848		
1928	5,573,223	8,507,600	14.78%	10.33%
1929	7,845,335	12,275,072	40.77%	44.28%
1930	9,110,285	13,874,832	16.12%	13.03%
1931	6,990,889	11,360,944	-23.26%	-18.12%
1932	5,063,638	8,960,224	-27.57%	-21.13%
1933	5,166,375	9,693,579	2.03%	8.18%
1934	7,435,151	11,835,457	43.91%	22.10%
1935	8,131,888	12,560,285	9.37%	6.12%
1936	9,858,151	14,638,927	21.23%	16.55%
1937	12,607,622	16,305,933	27.89%	11.37%
1938	10,227,766	12,254,194	-18.88%	-24.85%
1939	11,919,822	14,197,262	+16.54%	+15.86%
1940	14,317,595	16,905,387	+21.79%	+19.07%
1941	17,236,948	18,234,058	+18.73%	+7.86%
1942	20,724,118	19,642,765	20.23%	7.73%
1943	19,879,950	16,787,877	-4.07%	-14.53%
1944	21,865,943	17,411,977	+9.99%	+3.72%
1945	21,995,846	17,491,211	+59%	+46%
1946	25,083,023	17,612,908	+14%	+0.01%
1947	\$32,611,322	19,551,473	+30.01%	+11.01%
1948	\$37,275,195	20,530,085	+14.30%	+5.01%

Source: Department of Labor and Industries, State of Washington.

**NEW**

# *Dynomizing* PRINCIPLE

**—completely disintegrates  
any type of paper stock**

#### **The DynoPulper**

is equipped with two DynoPellers and is primarily used in a batch operation. A bale may be charged at one time. This machine is also available in laboratory size.

#### **The QuattroPulper**

is also primarily used in batch operations. It is equipped with four DynoPellers and will handle large volumes.

#### **The DynoChest**

is equipped with one DynoPeller and will process broke or slush stock. It is used as a storage chest while completing the defiberization of stock.

#### **The DynoFiner**

is equipped with either four or six small DynoPellers. It is used in a continuous operation and completely separates fibre bundles from slush stock.

The pulp or waste paper to be processed is hydraulically drawn into the center of the concave surface of the DynoPeller. The periphery of the DynoPeller is lined with numerous rough pieces of hardened tungsten carbide. Centrifugal force forces the stock over this roughened surface where the dynamizing action takes place in the treatment of the stock.

The stock is completely disintegrated—being reduced to its original fibre length—each individual fibre being completely separated from its neighbor.

**Send for additional information.**





## NEW USES MAY TAKE UP SLACK

# Readjustments Made

Even with the leveling off or tapering off of paper production in 1949—call it “disinflation” or “readjustment” or whatever you will—the North American continent was still producing paper this year at a rate 50% greater than in any pre-war year! It was that much higher than any year prior to 1940.

There were a number of shutdowns of temporary nature in the Northeast and Southern kraft regions in the spring of this year, and a few marginal mills carried along in the flush of high demand were reportedly folding for keeps, but still the best-informed prognosticators in the United States expected production for 1949 of about 21,000,000, about the same as in 1947. Canada and Newfoundland and Mexico were expected to hold up to about their 1947 trend.

But 1948 was a remarkable year. It is now history but it was the peak year for all-time records and it might be several years before its records are challenged. In the first section of this Review Number on “World-wide Trends” the steady long-pull “saw-tooth” climb of paper consump-

### U. S., Canada and Newfoundland

Following are figures showing how the total paper production of U. S., Canada and Newfoundland have increased in just the past decade (early this year Newfoundland was officially joined to Canada as part of the Dominion):

Year	Tons
1948	28,309,845
1947	27,255,170
1946	24,730,000
1945	21,965,000
1944	21,499,980
1943	21,252,032
1942	21,590,629
1941	22,637,141
1940	19,153,123
1939	17,410,144

tion, not only in North America but all over the world—keeping pace with population increases and spread of civilization and literacy—is fully detailed.

The North American continent made close to 28½ million tons of paper in 1948. With the postwar increased birth rate and lowered death rate increasing population

at a faster clip than ever the experts had anticipated, it is still very possible that continental production of 36 or 37 million in 1955, as suggested in this section a year ago, could be reached.

### Mexican Paper Production

In Mexico, where PULP & PAPER visited over a dozen mills last year, nearly everyone of which was expanding facilities, the paper production for 1948 is about 150,000 tons. This compares with 116,512 in 1947 and 105,178 in 1946. Capacity is being tripled over 1937 tonnage in that neighboring country and three new mills near Mexico City are still not in production. Mexico is shooting for a 240,000-ton annual production, according to this magazine's survey.

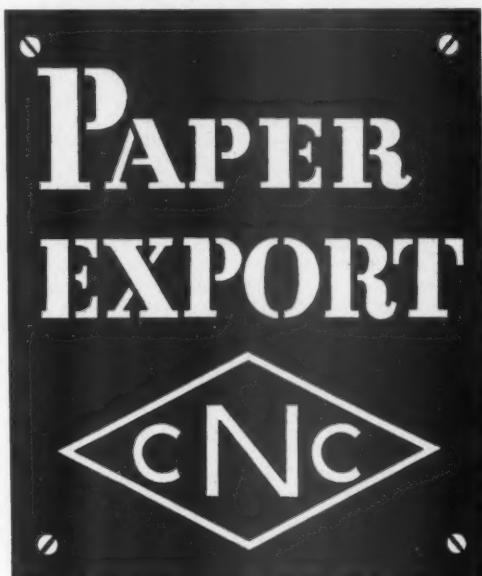
This was taking place in Mexico despite a general business recession fully a year before the inflationary movement was halted in the United States. The Mexican government is determined to make that country as self-sufficient as possible in papermaking and an important new kraft industry has been developed. It probably

### TOTAL PAPER PRODUCTION IN UNITED STATES

(Tons of 2,000 lbs.)

	1940	1942	1943	1944	1945	1946	1947	1948
Newsprint	1,056,304	967,211	811,309	720,752	725,475	772,797	833,038	866,235
Book	1,655,423	1,704,029	1,592,878	1,435,785	6,501,015	1,933,428	2,207,933	2,284,245
Groundwood	550,453	610,168	585,673	593,094	636,026	775,779	821,318	836,576
Fine	735,753	1,055,475	1,020,601	974,372	1,000,794	1,160,411	1,171,539	1,156,703
Wrapping (Coarse)	2,500,818	2,713,738	2,501,637	2,559,447	2,403,182	2,690,490	2,903,450	3,143,263
Tissue	733,894	170,653	162,766	157,540	157,083	183,837	194,624	230,323
Sanitary		811,343	806,023	807,893	823,705	860,658	894,032	963,366
Absorbent	129,410	64,530	88,254	90,107	88,643	102,811	100,486	108,614
Building Papers	682,460	1,001,383	877,582	881,246	883,259	1,035,639	1,276,942	1,287,675
Other Paper	60,120	16,148	129		238,047	271,643	289,499	317,858
Container Board	3,434,834	3,755,438	4,087,972	4,228,304	4,131,107	4,314,938	4,943,694	5,041,895
Folding Boxboard	1,416,452	1,711,795	2,015,640	2,116,152	2,092,344	2,317,496	2,249,136	2,153,313
Setup Boxboard	898,549	996,688	829,102	750,313	721,087	520,772	594,755	597,374
Tube Stock		164,785	307,308	458,107				
Building Boards	179,443	1,052,054	1,063,851	1,087,467	894,830	956,358	1,072,372	1,273,435
Other Boards	449,796	288,424	284,963	322,225	1,074,368	1,380,610	1,549,025	1,787,889
<b>TOTAL</b>	<b>14,483,709</b>	<b>17,083,862</b>	<b>17,035,688</b>	<b>17,182,804</b>	<b>17,370,965</b>	<b>19,277,667</b>	<b>21,101,833</b>	<b>22,048,766</b>

Source: Bureau of Census, U. S. Department of Commerce.  
Last year's data compiled from monthly survey. Note very slight difference in totals for last year from those used in other tables in this section.



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imported more than half as much paper as it made, however, last year. Pulp imports dropped off to 40,481 tons in 1947—25% off 1946—and there was a further big drop in 1948, as Mexico built up its pulp capacity toward a 152,000-ton goal.

#### "Eliminating War-Induced Shortages"

One of the sanest observations to be made on the current state of the paper industry in the United States is by Alexander Calder, president of Union Bag & Paper Corp. Said he: "In the paper and paperboard industry, further progress is being made toward eliminating war-induced shortages." This condition, one toward which the industry had been straining since the middle of the war, seemed better to describe conditions in the first quarter of 1949 than the word "slump" which was being used in some quarters.

Increased capacity, said Mr. Calder (along with other leaders) had brought about "equality of supply and demand in some products." The result was inevitably a receding of prices in those sectors of the paper and paperboard industry where the balance had been attained or nearly attained.

As this issue of the North American Review Number went to press, the industry had pretty well adjusted itself to that situation. Psychologically, the industry felt considerably better in April of 1949 than it had in January, or even during Paper Week in February. As nearly as could be ascertained, carloadings of paper, board

#### ARE THESE STATES STILL TOPS IN PAPERMAKING?

What states lead in various types of paper production in the U.S.?

This is a question often asked but difficult to answer since the Bureau of Census says it has no funds to make an up-to-date survey, and it has not made one since the end of the war. Also, it sometimes combines states in its figures.

But probably there hasn't been much change in the ranking of the states since then, so here goes with a list of leaders:

**NEWSPRINT**—Maine and New York, together, led with over 450,000 tons. Nearly twice as much as the next group—Washington, Oregon and Texas. (These three were lumped together as western producers.)

**BUILDING PAPERS**—New Jersey, first, with over 170,000 tons. Washington, and California, together, were in second place.

**BOOK PAPER**—Wisconsin and Minnesota, together, led with 275,000 tons. But Pennsylvania and Ohio were next with 232,000 and 220,000, respectively, which indicates they ranked even higher as individual states.

**FINE PAPERS**—Massachusetts and Connecticut, combined, were first with 170,000. Next were Wisconsin and Minnesota, with 160,000, far ahead of the field.

**TISSUE**—New York was the true leader with 36,000; Wisconsin an easy second with 30,000. (This despite the fact that a west-south group—Washington, Oregon, California and Mississippi—were lumped with 42,000.)

**GROUNDWOOD PRINTING**—New York, by a good margin, 214,000. Maine was second. Washington, Oregon and Minnesota, combined, were third.

**SANITARY PAPER**—Wisconsin and Minnesota, combined, led with 230,000. But Pennsylvania's 192,000 and New York's 182,000, indicated they might be the true leaders in first and second place.

The tonnage figures shown above were for 1945 and, of course, are out of date. In most cases they would probably be much greater in 1948. Actually total paper production was 27% higher in 1948.

However, there may not have been any important changes in the comparative ranking of states as shown above.

and paper products in the first quarter of 1949 were about 0.3% greater than in the same quarter of 1948. The industry had to stop and ask itself: "Did anybody think it would keep rising?" The answer had to be "No—nobody did." In fact, the leveling off had been freely predicted, in actuality, since the end of the war. And no industry expert appeared to believe that prices would break down to pre-war levels or to OPA levels. At this writing, they had a long way yet to go before those "ceilings"

—which had now become "floors"— were reached.

Nevertheless, there were still some price adjustments to be made. Salesmen were beating the bushes again and some of them were coming back to the mill with the plea, "If you can take off one or two cents more per pound I can get you plenty of cars—just one or two cents." In some instances, the mills were hanging tough as long as possible, in others the management relented. Much depended on the

#### UNITED STATES PAPER PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION (Quantities in Tons of 2,000 Pounds) TOTAL — ALL GRADES

Year	Production	Imports	Exports	Consumption	
				Tons	Lbs. Capita
1899	2,167,593			2,167,593	57.9
1904	3,106,696		77,704	3,028,992	73.3
1909	4,121,495	55,962	74,764	4,102,693	90.5
1914	5,152,705	349,278	106,713	5,395,270	110.2
1919	5,966,076	707,548	420,540	6,253,084	119.1
1924	7,929,985	1,500,433	149,541	9,280,877	164.0
1925	9,001,742	1,567,121	152,351	10,416,512	181.4
1926	9,794,086	1,973,451	183,130	11,584,407	198.8
1927	10,002,070	2,107,344	184,226	11,925,188	201.8
1928	10,403,338	2,266,828	218,730	12,451,436	207.8
1929	11,140,235	2,533,603	262,383	13,411,455	220.7
1930	10,169,140	2,365,272	215,811	12,318,601	200.7
1931	9,381,840	2,136,079	170,891	11,347,028	182.8
1932	7,997,872	1,848,016	119,292	9,726,596	155.6
1933	9,190,017	1,852,420	126,854	10,915,583	173.6
1934	9,186,598	2,265,281	163,199	11,288,680	178.3
1935	10,479,095	2,456,998	178,370	12,757,723	200.1
1936	11,975,552	2,855,153	179,727	14,650,978	228.1
1937	12,837,003	3,435,222	232,361	16,039,864	248.2
1938	11,380,814	2,357,477	208,064	13,530,227	207.8
1939	13,509,642	2,702,952	266,070	15,946,515	243.4
1940	14,483,709	2,826,880	578,248	16,732,341	254.2
1941	17,762,365	3,120,213	494,911	20,387,667	308.9
1942	17,083,862	3,046,207	390,837	19,739,132	296.8
1943	17,035,688	2,762,429	347,864	19,450,253	286.8
1944	17,182,804	2,616,000	312,917	19,485,887	286.6
1945	17,370,965	2,753,211	458,689	19,663,487	281.7
1946	19,277,667	3,625,422	393,301	22,509,788	318.8
1947	21,101,833	4,120,918	474,149	24,748,602	343.7
1948*	22,062,445	4,580,000	385,000	26,257,445	358.5

Source: American Paper & Pulp Assn., from Bureau of Census and Department of Foreign Domestic Commerce.  
\*Preliminary.



# PULP PAPER

and Standard Jumbo, White and Blue

Standard Export Paper

BULKLEY-DUNTON & CO., INC.  
BULKLEY-DUNTON PAPER CO.  
BULKLEY-DUNTON PAPER CO., INC.  
BULKLEY-DUNTON & CO. EXPORT INC.  
BULKLEY-DUNTON PAPER (FAR EAST) LTD.  
New England —  
CARTER, RICE & CO. CORPORATION

any changes in the paper

All these companies have  
selected the right pulp  
to the most suitable market  
for paper, converters and  
customers benefit from policy  
concerning

BULKLEY-DUNTON  
ORGANIZATION  
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product and the state of its market. Noticeable was the fact that the better mills were making no rush for the lowest price, and notable, too, was the fact that most customers were not leaving old suppliers—who had done their best during shortages—for a mere one or two cents per pound.

Based on Bureau of Census estimates, paper and paperboard sales this year would amount to \$1,300,000,000. This would represent a decline of 14.3% from 1948, but would be at least \$347,000,000 above the figure for 1945 which was considered a very good year by the industry. It would be \$261,000,000 below a 1947 peak of \$1,552,000,000.

#### Magazine Field Settles

The magazine field had long ago settled down. The "war babies" had disappeared from the newsstands and the fight for circulation and the advertisers' dollar was again entirely among the established publications. Circulations among the giants were holding up well, but circulation managers were again hot after readers. Example: *Time* offered 44 weeks' subscription at a rate of \$3.87. Some slight desperation in the fight for readers could be detected also in the editorial offices.

#### Book Publishing Improves

Book publishing was improving after a marked dip late in 1948 and early this year, but in the first quarter of 1949 it looked as if about 10 per cent fewer titles would be published than saw the light in 1948. Sales were not phenomenal except in the very big book club selections. During the war years a very minor novel easily sold from 10,000 copies upward. This year a number of titles were on the "best seller" lists with a sale of only 20,000 copies. Costs were still bothering book publishers, and the public was shying from fiction at \$3.50 although still willing to pay that price for important nonfiction.

#### New Uses for Paper

In last year's Review Number considerable mention was made of the possible new uses for paper. It is still a per-

#### Canadian Paper Production

1947 (Latest Available)

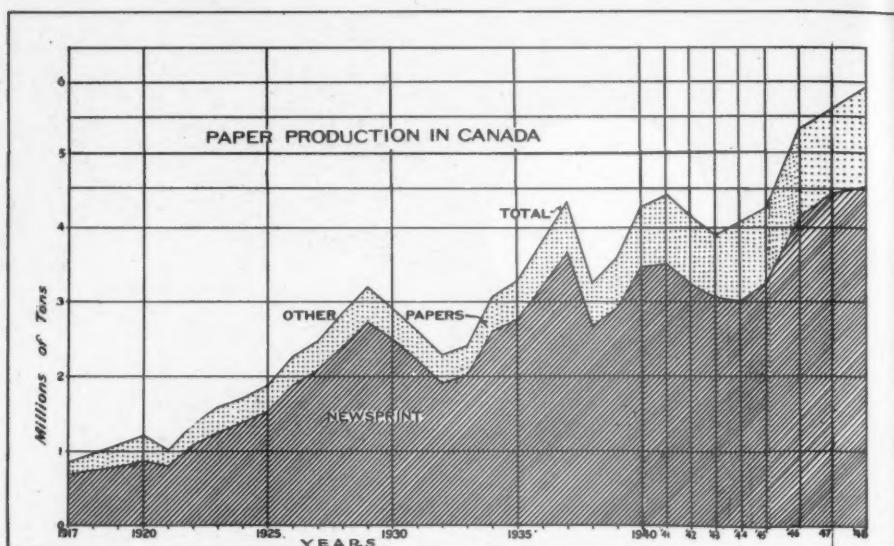
Newsprint	4,474,264	\$335,540,669
Book and Writing	210,762	39,727,187
Wrapping	188,742	26,009,996
Paperboard	744,377	66,126,302
Tissue	67,506	12,179,636
All other	89,431	7,517,467
	5,773,082	\$507,101,277

Source: Dominion Bureau of Statistics.

#### CANADIAN PAPER PRODUCTION BY PROVINCES (Quantity in Tons—Value in Dollars)

Years	Quebec	Ontario	British Columbia	Other Provinces	TOTAL
1945 Tons	2,292,442	1,267,796	334,502	464,836	4,359,576
1945 Value	\$148,180,691	\$86,395,223	\$20,353,984	\$27,907,716	\$282,837,614
1946 Tons	2,867,594	1,579,537	370,950	529,037	5,347,118
1946 Value	\$213,045,633	\$120,929,769	\$26,733,893	\$36,247,095	\$396,956,390
1947 Tons	3,099,658	1,730,965	412,818	531,641	5,775,082
1947 Value	\$269,588,727	\$158,603,917	\$35,342,443	\$43,566,190	\$507,101,277
1948 Tons	.....	.....	**410,994	.....	*5,847,400

\*Estimated by PULP & PAPER. \*\*From British Columbia Forest Service. Other data is latest available from Dominion Bureau of Statistics.



CANADIAN PAPER PRODUCTION figures for latest available years, officially, were: Total Paper—5,773,082 tons in 1947; 5,347,118 tons in 1946; 4,359,576 tons in 1945; 4,044,376 in 1944; 3,882,262 tons in 1943; 4,164,565 in 1942, and 4,449,598 in 1941. Total newsprint—4,447,000 in 1947; 4,162,158 tons in 1946; 3,324,039 in 1945; 3,039,783 in 1944. PULP & PAPER estimate for 1948 showed total production increased to 5,847,400 tons and the Newsprint Association of Canada estimates newsprint for 1948 at 4,575,000 tons.

#### CANADIAN PAPER PRODUCTION (Selected Years)

	Newsprint		Total Paper	
	Tons	\$ Value	Tons	\$ Value
1917	689,847	38,868,084	853,689	58,750,341
1922	1,081,364	75,971,327	1,366,815	106,260,078
1929	2,725,331	150,800,157	3,197,149	192,989,252
1932	1,919,205	85,539,852	2,299,767	114,115,570
1939	2,926,597	120,858,583	3,600,502	170,776,062
1940	3,503,801	158,447,311	4,319,414	225,836,809
1941	3,519,733	158,925,310	4,524,776	241,450,292
1942	3,257,180	147,074,109	4,231,767	230,269,512
1943	3,046,442	154,290,163	3,966,344	235,362,958
1944	3,039,783	165,655,165	4,044,376	255,545,841
1945	3,324,039	189,023,736	4,359,576	282,837,614
1946	4,162,158	280,809,610	5,347,118	396,956,390
1947	4,474,264	355,540,669	5,775,082	507,101,277
1948	4,575,000*	431,650,000*	5,847,400**	

Source up to last year—Dominion Bureau of Statistics:

\*Estimated by Newsprint Association of Canada.

\*\*Estimated by PULP & PAPER.

tinent subject, because at no time during 1948 was the industry in a mood to fully explore new uses. The reason was the same as it had been in 1947: Lack of wood and pulp supply, and failure of paper supply to meet the full demand. The development of new uses, from 1940 until the present time (except for war uses), has been too confined to show any real progress.

Now that supply appears to have reached the demand, now that some machines are idle for a part of the week, now that some companies are reaching for new markets, will these long prophesied new uses come to pass?

PULP & PAPER still believes that they

will, but the extent to which they appear will depend greatly on how much attention the industry is willing to give to market research, how open-minded it is going to be to the outsider with an idea. The reason for this publication's optimism about new uses to take up production slack is a simple one. So many important new ideas came to light during the pulp and paper shortages that certainly a great many more are going to appear in a period when the industry is in search of buyers.

Example: One nationally known company, fabulously successful with a product for women, is investigating possibilities of a new product using dissolving pulp for use in the baby field.

And the baby field brings to mind one of the most important factors in the whole future outlook for the industry. Postwar population was far beyond the figures pegged by the experts before the war, and it is still on the rise. The population is increasing much faster than the industry's ability to increase production, and according to D. Clark Everest, president of Marathon Corp., the per capita consumption need not necessarily decline because of it.

(Continued on page 76)

# SULPHUR

\*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

## \*MAN MADE MOUNTAINS



Be Sure To Go To The Portland TAPPI Meeting!

Loading operations at one of the huge vats of Sulphur at our Newgulf, Texas mine. Such mountains of Sulphur are constantly being built at our mines, from which shipments are continually made.



**TEXAS GULF SULPHUR CO.**  
75 East 45th St. New York 17, N. Y.  
INC.  
Mines: Newgulf and Moss Bluff, Texas

### The Situation in the South

Some concern was being felt in the big Southern kraft operations, according to best observers, and at least one big operator was anticipating conditions by cutting its bag operation to 80% of capacity. But the wood situation in the South, and the tremendous efficiency of these mills, still left plenty of room to move around in, in the opinion of qualified observers.

Throughout the period of readjustment, concern has been expressed for the smaller non-integrated mills, particularly in the Northeast. While it is true that a very small number had shut down or were on curtailed schedules, the majority of these mills found themselves in good position. Certainly the pulp market situation was moving in their favor, and in many ways these operations can be more agile, production-wise, than some of the bigger and more efficient operations.

### INVENTORIES IN U. S.

Inventory of paper between the end of the paper machines and the point of actual consumption of the paper is one of the most uncertain factors in any analysis of the supply and demand for paper. This is a summary of the interesting studies made by the American Pulp and Paper Association.

The index of the Basic Demand for paper, developed and published by APPA, offers something of a measure of the change in inventories of paper. The index of Basic Demand measures demand at the point of consumption. In normal times the index represents consumption. Increases in overall inventories result when Supply, generally in the form of production, exceeds consumption or basic demand, while with supply less than consumption inventories are lowered. As each index point represents a definite tonnage the increases and decreases in overall inventory tonnage may be approximated by a simple mathematical calculation. The table and chart show the changes in overall inventories thus determined for annual periods from 1934 to the present.

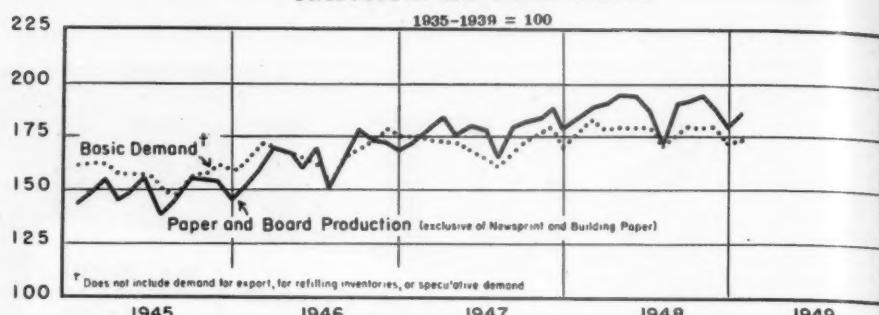
#### CHANGES IN U. S. PAPER INVENTORY 1934-1948

	ANNUAL TONS	CUMULATIVE TONS
1934	- 14,043	—
1935	+ 5,015	— 19,058
1936	+ 108,333	— 89,275
1937	+ 576,773	— 666,048
1938	+ 107,330	— 773,378
1939	+ 241,743	— 1,015,121
1940	+ 644,983	— 1,660,104
1941	+ 809,488	— 2,469,592
1942	- 905,784	— 1,563,808
1943	- 1,012,111	— 551,697
1944	- 1,236,802	— 685,105
1945	- 977,003	— 1,662,108
1946	- 393,209	— 2,055,317
1947	+ 702,158	— 1,353,159
1948	+ 1,215,737	— 137,422

Inventories were presumably at a very low depression level in 1933. There was little increase until the 1937 boom. During 1940 and 1941 before Pearl Harbor, inventories rose sharply to a prewar peak which at the end of 1941 showed a total cumulative increase of almost 2½ million tons above the 1933 level. Decreases occurred in each of the war years. It seems probable that at the end of 1944 inventories were for all practical purposes exhausted below a minimum working level. If so the inventory "deficits" during the years 1945 and 1946 were merely measures of shortages when normal users were actually without paper because it was not available.

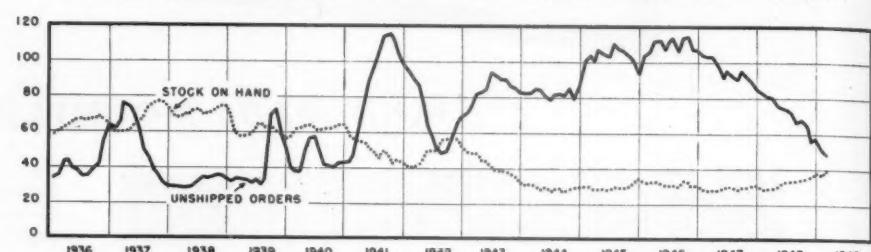
The increases of inventories in 1947 and 1948 have practically wiped out the theoretical "deficit" at the end of 1946. At the moment these inventories appear to be back to a "minimum practical working level."

### PRODUCTION AND BASIC DEMAND



### UNITED STATES PAPER

UNSHIPPED ORDERS AND STOCK ON HAND AT MILLS EXPRESSED AS PER CENT OF CAPACITY



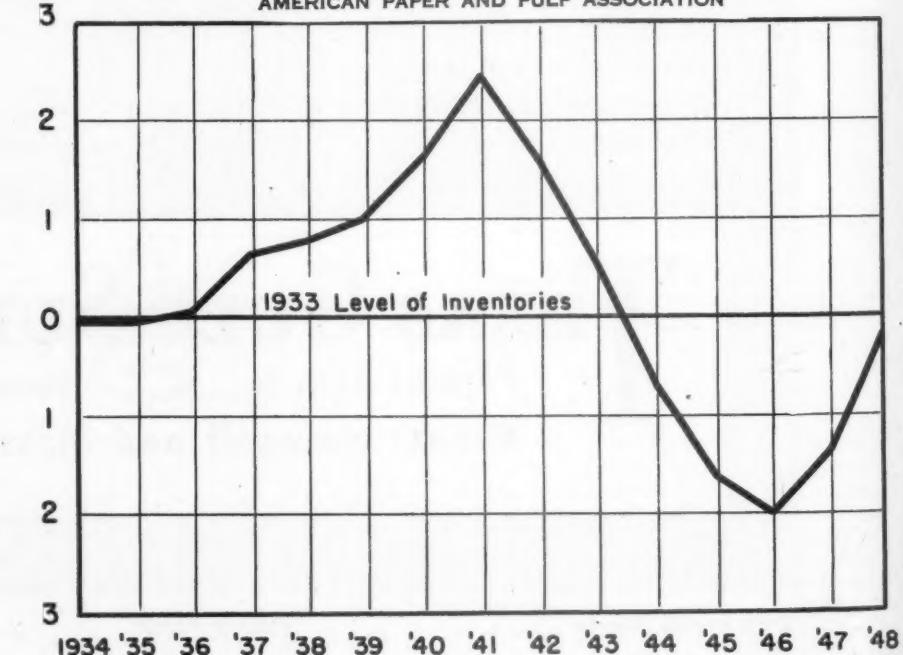
### AMERICAN PAPER AND PULP ASSOCIATION

that time in addition to the basic demand or "demand at the point of consumption" all mills were experiencing:

1. Demand to fill up inventories that had been badly depleted during the war.
2. A heavier than usual export demand. South American countries in particular had accumulated during the war large dollar balances which they were spending here.
3. Speculation demand from those who wished to make a quick turnover and a cleanup.

When production is above the basic demand line inventories in the hands of merchants and consumers are building up. When production is below the basic demand line paper is being consumed faster than it is produced and inventories are being reduced.

### CUMULATIVE INVENTORY CHANGES SINCE 1933 AMERICAN PAPER AND PULP ASSOCIATION



## United States Paper Production, Imports, Exports, and Consumption

(Quantities in Tons of 2,000 Pounds)

Year—	Production	Imports	Exports	Consumption			Year—	Production	Imports	Exports	Consumption		
				Tons	Lbs.	Capita					Tons	Lbs.	Capita

### All Paper Other Than Paperboard

(See "Fibreboard" Section for Paperboard)

1899	1,773,482	—	—	1,773,482	47.4		1939	7,480,942	2,668,040	137,249	10,011,733	153.0
1904	2,546,985	—	—	77,704	2,469,281	59.7	1941	9,362,405	3,086,528	317,085	12,131,848	182.2
1909	3,238,407	55,962	74,764	3,219,605	71.0		1943	8,415,254	2,666,766	224,323	10,857,697	159.1
1914	3,860,900	349,278	106,713	4,103,465	83.8		1945	8,457,229	2,702,022	303,669	10,855,582	155.5
1919	4,099,012	663,087	358,650	4,403,449	83.9		1946	9,787,493	3,583,075	284,143	13,086,425	185.4
1924	5,079,985	1,445,158	100,880	6,424,263	113.5		1947	10,692,861	4,060,809	297,647	14,456,023	200.7
1929	6,775,510	2,501,492	169,053	9,107,949	149.6		1948	11,226,138	4,505,000	239,300	15,491,838	211.5
1934	5,173,053	2,252,969	114,483	7,311,539	115.7							

### Newsprint

1899	569,212	—	—	569,212	15.2		1939	954,259	2,615,129	13,495	3,555,893	54.2
1904	912,822	—	—	52,159	860,663	20.8	1941	1,043,999	2,982,375	70,265	3,956,109	59.9
1909	1,168,098	—	—	48,740	1,119,358	24.7	1943	811,309	2,637,429	35,256	3,413,482	50.3
1914	1,313,284	278,403	44,483	1,547,204	31.6		1945	725,475	2,668,799	43,611	3,350,623	48.0
1919	1,323,880	627,734	110,268	1,841,346	35.1		1946	772,797	3,490,280	27,685	4,235,392	60.0
1924	1,481,425	1,357,233	17,159	2,821,499	49.8		1947	833,038	3,957,327	27,891	4,762,474	66.1
1929	1,409,169	2,422,700	18,695	3,813,174	62.8		1948	865,634	4,400,000	26,000	5,239,634	71.5
1934	989,703	2,209,698	23,405	3,175,998	50.2							

### Book Paper

1899	304,459	—	—	304,459	8.1		1939	1,546,930	13,749	22,463	1,538,216	23.4
1904	454,337	—	—	454,337	11.0		1941	2,025,891	28,506	51,752	2,002,645	30.4
1909	582,114	1,104	—	583,218	12.9		1943	1,592,878	28,000	31,566	1,589,312	23.4
1914	795,958	6,489	14,301	788,146	16.1		1945	1,501,015	29,689	62,455	1,468,249	21.0
1919	828,641	146	76,691	752,096	14.3		1946	1,933,428	81,050	59,845	1,954,633	27.7
1924	1,050,000	14,328	10,970	1,053,358	18.6		1947	2,207,923	74,432	76,380	2,205,975	30.6
1929	1,497,912	3,406	27,567	1,473,751	23.9		1948	2,289,126	83,000	58,000	2,314,126	31.6
1934	1,055,247	4,730	12,066	1,047,911	16.6							

Beginning with 1941, text papers allocated to fine papers.

### Fine Papers

1899	131,456	—	—	131,456	3.5		1939	613,995	573	20,498	594,070	9.0	
1904	168,982	—	—	168,982	4.1		1941	950,014	2,750	46,783	903,390	13.7	
1909	215,791	—	—	215,791	4.7		1943	1,020,061	663	58,525	962,376	14.4	
1914	269,407	—	—	266,038	5.4		1945	1,000,794	589	86,598	914,785	13.1	
1919	347,346	—	—	37,680	309,666	5.9		1946	1,160,411	477	82,682	1,078,206	15.3
1924	422,000	1,373	4,040	419,333	7.4		1947	1,232,670	728	69,954	1,163,444	16.2	
1929	635,662	1,613	16,660	620,615	10.2		1948	1,171,539	728	69,954	1,102,313	15.3	
1934	434,870	879	10,263	425,486	6.7								

From 1899 to 1940 inclusive, only writing and cover were included in fine papers. Beginning with 1941, text papers (from book), bristol (from paperboard), and "thin papers" (from tissue) have been added.

### Wrapping and Bag

1899	535,252	—	—	535,252	14.3		1939	2,238,993	14,954	41,014	2,212,933	33.8
1904	644,291	—	—	644,291	15.6		1941	2,262,377	1,009	49,675	2,213,711	32.4
1909	763,067	—	—	763,067	16.8		1943	2,314,031	2,133	43,956	2,272,208	32.9
1914	911,029	18,258	7,067	922,220	18.8		1945	2,403,182	802	51,690	2,352,294	33.7
1919	858,464	2,401	49,408	811,457	15.5		1946	2,690,490	7,072	50,086	2,647,476	37.5
1924	1,235,000	25,540	18,520	1,242,020	21.9		1947	2,903,450	22,175	51,026	2,874,599	39.9
1929	1,605,783	9,344	29,425	1,585,702	26.1		1948	3,156,162	18,000	57,000	3,117,162	42.6
1934	1,356,115	5,124	32,160	1,329,079	21.0							

### Tissue

1899	28,406	—	—	28,406	0.7		1939	665,723	9,347	14,695	660,375	10.1
1904	43,925	—	—	43,925	1.1		1941	912,874	76	26,500	889,035	13.5
1909	77,745	—	—	77,745	1.7		1943	968,789	131	23,210	948,479	14.0
1914	115,401	—	—	115,401	2.4		1945	980,788	105	18,127	962,766	13.8
1919	190,561	245	—	190,806	3.6		1946	1,044,495	114	17,093	1,027,516	14.6
1924	242,000	6,795	4,368	244,427	4.3		1947	1,088,656	923	18,154	1,071,425	14.9
1929	387,811	10,527	7,725	390,613	6.4		1948	1,198,493	1,300	8,500	1,191,293	16.3
1934	397,196	8,687	7,281	398,602	6.3							

Beginning with 1941, "Thin Papers" have been allocated to fine papers.

### All Other Paper\*

1899	204,697	—	—	204,697	5.6		1939	1,384,774	4,863	24,146	1,365,491	20.8
1904	322,628	—	—	25,545	7.1		1943	1,759,300	4,092	26,661	1,736,731	25.4
1909	431,592	54,858	26,024	460,426	10.2		1944	1,809,863	2,573	25,420	1,787,016	25.9
1914	455,821	46,128	37,493	464,456	9.5		1945	1,845,875	2,038	41,148	1,806,865	25.9
1919	559,941	32,561	84,603	507,899	9.7		1946	2,185,872	4,082	46,752	2,143,202	30.3
1924	649,560	39,889	45,823	643,626	11.5		1947	2,488,255	5,224	54,242	2,439,237	33.9
1929	1,152,711	43,662	67,937	1,128,436	18.6		1948	2,534,901	2,050	46,30		



## CONTINENT MARK; DATA BY STATES

# Supplies Are Ample

### World Pulpwood Production

The most recent available data for world-wide production of pulpwood are for the year 1947, as compiled by the Food and Agriculture Organization of the United Nations. This includes wood for plastics, rayon, paper, paperboard and fibreboard products.

Reporting nations to the FAO did not include Soviet Russia and some of its satellites and a few other very small countries. The FAO figures show these comparisons:

#### PULPWOOD PRODUCTION In Thousands of Cubic Meters

(1 Cu. Meter Equals 35.31 Cu. Ft.)

	1946	1947
Total Reported .....	88,100	97,000
Europe .....	26,300	28,700
U. S.-Canada-Newf. ....	60,400	67,000
Latin America .....	200	100
South Africa .....	48	7
East and South Asia....	900	800
Australia-New Zealand..	300	400

The 1947 figures for important countries (1,000s of cu. meters):

U. S. A.....	36,872
Sweden .....	9,300
Finland .....	9,000
Norway .....	3,500
German French Zone.....	1,716
German Bizone .....	1,684
Austria .....	802
France .....	628
Poland .....	520
Italy .....	220
Switzerland .....	197
Canada .....	27,897
Newfoundland .....	2,265
Brazil .....	128
Mexico .....	14*
Japan .....	780
South Korea .....	7
Australia .....	369
New Zealand .....	26
United Kingdom** .....	16
Turkey .....	43

\*Mexico reported 67,000 c.m. in 1946.

\*\*Only state forests.

As the 1949 North American Review Number went to press, supplies of pulpwood appeared to be ample or more than ample in almost all sections of the U. S. and Canada. Three factors have contributed to this condition: first, favorable weather conditions, great strides in mechanization and a lessening of demand.

Although weather conditions were generally good in the first quarter, the lack of snow in the Northeastern area cut down production considerably—yet mills found themselves well enough supplied. In the South, supplies were adequate this Spring. In the Great Lakes states the majority of mills were attempting to reduce inventories. The Department of Commerce reported that "pulpwood operations in the Lake States are expected to halt this Spring with activity resuming later this year" in the hope of lower prices.

In the Columbia and Willamette river areas pulpwood supplies are reported adequate to sustain pulp production at suitable levels. There was unusual weather in these areas: heavy snows in the foothills and freeze-ups in the Cascades. As a result, logging operations were very slow or at a standstill in the first weeks of the year. But in April the logging roads were being reopened and conditions were generally better for production.

One of the phenomena of 1949 in pulpwood activities was the increased availability of labor and a consequent increase in productivity per man-day. Early in the year negotiations for a raise in wages was being negotiated, and general labor-industry relations were reported to be healthy. There were price reductions this Spring which reflected a slight lessening of demand. Lake States prices were reported off fifty cents per cord in January, and there were drops in the South ranging to ten per cent. Such drops have been expected, because there has been a very steady rise since 1937 and prices of 1948 were generally higher than in 1947. The average cost per standard cord F.O.B. has run like this, according to the Bureau of Census:

1947 .....	\$17.83
1939 .....	7.82
1938 .....	8.10
1937 .....	7.97

This little table must be viewed in light of the fact that pulpwood prices vary to a great degree between regions and species, and transportation and logging conditions account for the larger part of the spread.

As will be seen from the tables here-with, pulpwood consumption and production again reached an all-time high in 1948, exceeding all previous records, and reflecting the high demand of the pulp and paper industry for that year. But at this writing, 1948 figures are no criterion but merely history. The pulpwood situation was viewed as "excellent" by the industry mills, with supplies adequate or more than adequate and prices softening. And, as pointed out in this Review Number action last year, the development of pulpwood as a crop by thousands of farmers and woodlot owners has barely been scratched. Figures on timber resources published in this issue back up that conclusion, and it was evident this year at Paper Week that the woodlot program of American Forest Products Industries is really just now getting underway in several important areas.

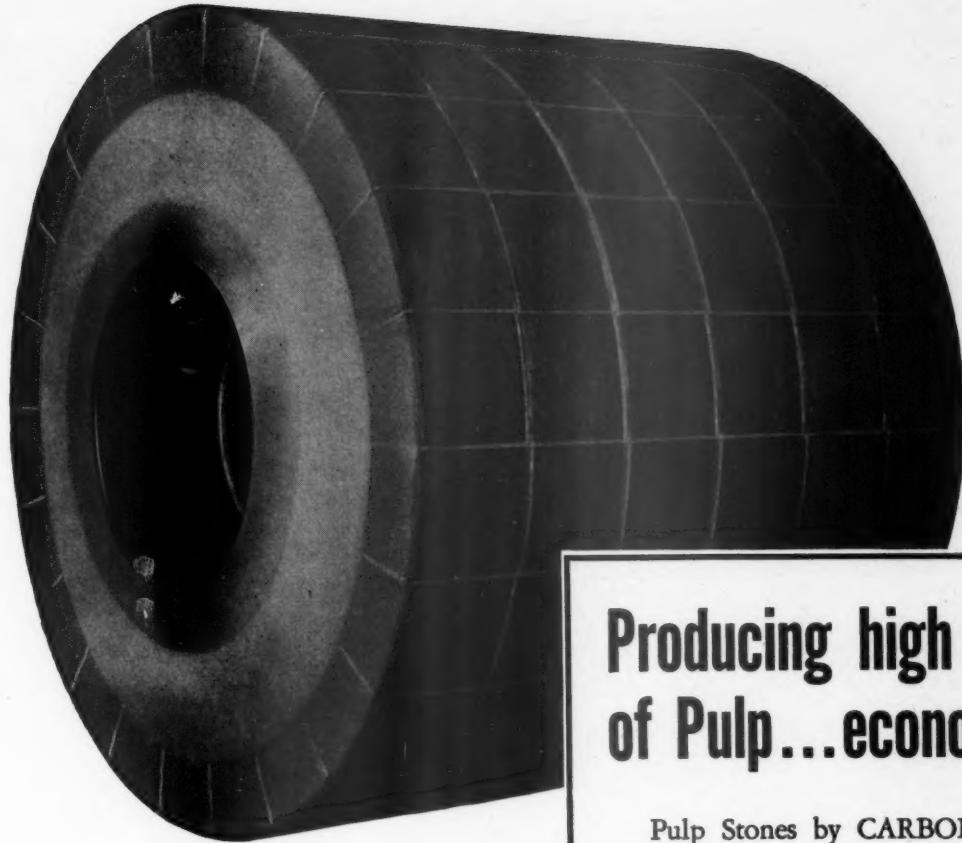
Canada was holding tightly to its avowed policy of processing on the northern side of the boundary wherever possible, bringing into question still the "critical 10%" of pulpwood which comes to the northern U. S. mills from Canada. But in 1948 the policy did not work out to the perfection which Canada would like to attain. The government can control completely the wood from crown lands, but not from fee lands—and there was a period in 1948 when Canada found its own wood market flooded and so allowed shipments over the line. Now, if supplies continue to be adequate and the demand continues to soften, Canada's policy may not be as critical to U. S. industry as was felt last year. And if Canadian inventories

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# PULP STONES

By

**CARBORUNDUM**  
TRADE MARK

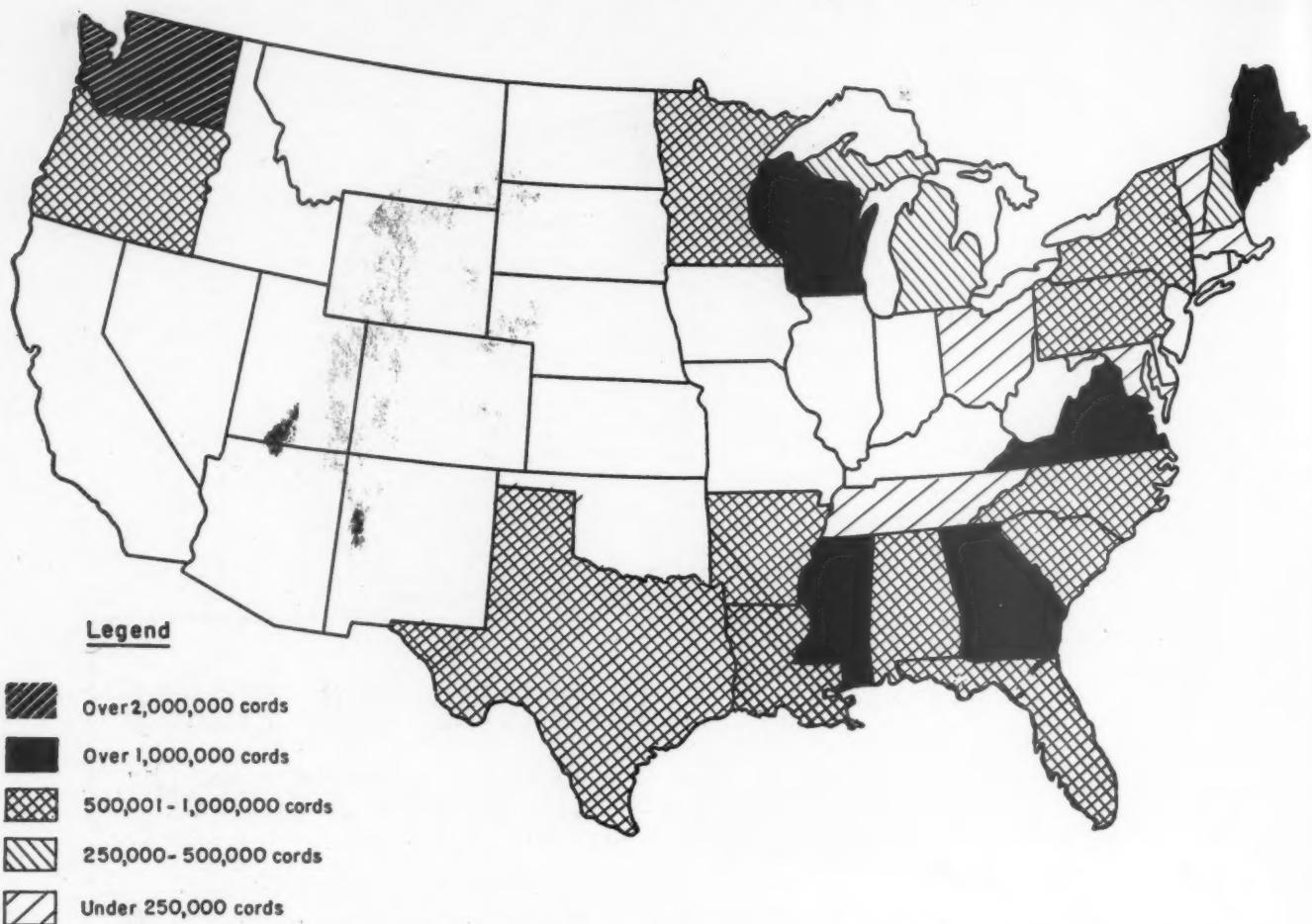
## Producing high grades of Pulp...economically

Pulp Stones by CARBORUNDUM are available in various structures to meet your specific grinding conditions. Produced under scientific control, they offer safe continuous low cost operation.

These wheels operate on long burning cycles assuring fewer variations in pulp quality. They are strong, durable, and economical. The Carborundum Company, Niagara Falls, New York.



"Carborundum" is a registered trademark which indicates manufacture by  
The Carborundum Company.



#### U. S. Production of Pulpwood data or estimates gathered by PULP & PAPER editors

THIS MAP BY PULP & PAPER'S artist is based on estimates gathered from all parts of the United States by PULP & PAPER editors. What are known to be very accurate figures have been gathered in the South. WASHINGTON STATE is the leader by a wide margin and the only state in the Union producing over 2,000,000 cords. Recent figures are not available but it is known to have been over 2,000,000 cords for several years and was close to 2½ million in 1946. MISSISSIPPI produced 1,476,000 cords in 1948; GEORGIA produced 1,300,000 and VIRGINIA 1,100,000. SOUTH CAROLINA, FLORIDA and LOUISIANA were between 900,000-1,000,000 last year. MAINE used to be tops and for some years ran second to WASHINGTON. WISCONSIN has been over a million. The last U. S. Census Bureau figures on consumption—production plus imports (only the northern states import—from Canada—and this was limited to 65,000 cords in WASHINGTON each year since '42, but increased to 165,000 last year) for 1946; WASHINGTON, 2,214,000; MAINE, 1,860,000; WISCONSIN, 1,611,000.

build up, then this, too, may modify the policy. But that is only conjecture, and the fact remains that the Dominion policy is still very strong for processing at home.

The rather sudden change in the pulpwood situation evidenced in the early part of this year also changes factors in the South. At least for this year the concern over wood supply is eased, if first quarter appearances hold shape. This has an interesting possibility—for if the industry is to be given a breather on pulpwood supply there will be an ability to develop new supply through tree farms as now being organized, and expansion in mills is still going on in that area, despite early year trends.

#### Some New Records

U. S. consumption of pulpwood in 1948 set an all-time record of 21,189,458

cords, nearly 1½ million more than any previous year (128 cu. ft. per cord).

Compare it with pulpwood consumption by decades before the war in the U. S. Consumption for the 1930 decade was at the rate of only about 8 million cords annually; for the 20's only a little more than 6 million cords.

Production of pulpwood in both the U. S. and Canada reached a volume never before achieved in either of those countries. The Canadian figures are discussed later. In the U. S., total receipts of wood were 22,332,680 cords, of which 20,026,284 were produced in the U. S. and the rest came from Canada.

U. S. production was 1½ million cords more than the previous record year of 1947, and total receipts were 1¾ millions more. These figures are shown in this section, detailed by regions and compared with past years.

#### Canadian Wood Exports

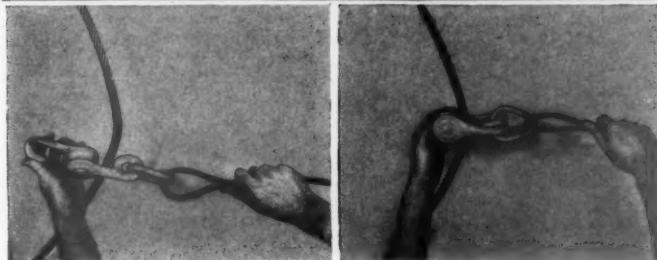
The Ontario government's avowed program to virtually eliminate exports of wood to the United States in about eight more years was showing up in the accompanying table on the U. S. pulpwood statistics. Exports to the U. S. Lake States fell over 50,000 cords to 708,000 in 1948, but that was only a beginning.

On the other hand the rigid restriction of wood exports from British Columbia to Washington state mills, enforced since 1942, was relaxed to the point where the hemlock and balsam export quota was raised from 32½ million ft. to 82½ million feet (65,000 to 165,000 cords). Before 1942, back in 1941 there had been a record shipment of close to 200,000 ft.

Gradual elimination of Ontario exports are calculated to take place over 3, 4 and



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10 year periods, depending on the companies, and their investment in Ontario, whether they have plants there and their wood holdings and other factors.

### RECORD BY STATES IN SOUTHERN U. S.

Production of pulpwood in Southern U. S. during 1948 continued its upward trend to provide raw material for increased capacity in the southern industry, according to authoritative data gathered in the Southern States by PULP & PAPER and shown in the chart on page 84. The yield for 1948 was very close to 10,000,000 cords. It has been forecast that the completion of southern mill projects would bring consumption of pulpwood to 11,000,000 cords annually in 1950. This compares with 9,241,000 cords in 1947, according to data compiled in the table herewith.

The overall picture in the South in respect to supply reveals a trend in some areas to level off perhaps due to local factors such as stricter application of conservation methods to the existing stands with the shift of a small portion of the supply burden elsewhere. The concentration of demand continued in the Southeastern states bordering the Atlantic coast, but in the coming two years the increased productive capacity in Alabama will bring a greater demand for pulpwood in that area.

#### Southeastern States

In Virginia the pulpwood cut was increased by 5.6% to 1,025,000 cords in 1947. It is believed the 1948 cut approximated that of 1947. In North Carolina the cut increased 7.8% to 765,000 cords in 1947, but the probable yield in 1948 is placed at 650,000 cords, a decrease of 15%. In South Carolina the 1947 yield decreased 7.2% to 948,000 cords, but increased in 1948 to 975,000 cords, 2.8% over the preceding year. The pulpwood cut in South Carolina was approximated at 90% or more in pine. In Georgia, the 1947 figure of 1,215,000 cords is a 6.3% increase. It is believed the 1948 yield was slightly higher. In Florida, an increase of 1.9% to 881,000 cords was recorded in 1947. A comparable gain was achieved in 1948.

The combined yield of these Southeastern states in 1946 of 4,711,000 cords increased 2.6% to 4,835,000 cords in 1947. It is probable that with the slowing down of production in the upper section the total figure for 1948 was close to the preceding year.

The situation in Virginia and the Carolinas is reflected in the opinion of forest leaders who say that in Virginia there will be a definite shortage of pine pulpwood if the existing pulp mills, stave mills, and sawmills continue to operate at present capacity. North Carolina, however, sees no immediate hazard of a pulpwood shortage. In South Carolina, the same confidence is also expressed insofar as immediate prospects are concerned. The future supply of existing pulp mills is made secure in Virginia because it is felt that the increased intensity of

### U. S. PULPWOOD STATISTICS (1941-1948, INCLUSIVE) Receipts, Imports, Consumption and Inventories

(In Thousands of Cords)

	1948	1947	1946	1945	1944	1943	1942	1941
<b>RECEIPTS</b>								
United States, total	22,333	20,613	18,978	16,983	16,998	15,293	17,140	16,458
Domestic	20,026	18,529	16,980	15,254	15,349	13,581	14,908	14,177
Imported	2,307	2,084	1,997	1,729	1,650	1,712	2,232	2,281
Northeast, total	4,039	4,110	3,650	3,389	3,039	2,954	3,399	3,486
Domestic	2,666	2,970	2,508	2,311	1,976	1,906	2,238	2,252
Imported	1,373	1,140	1,142	1,078	1,063	1,047	1,161	1,235
Appalachian, total	1,763	1,633	1,716	1,388	1,482	1,303	1,475	1,412
Domestic	1,739	1,610	1,684	1,365	1,472	1,302	1,448	1,378
Imported	24	23	32	23	10	2	27	34
South, total	9,997	8,227	7,909	7,153	7,090	6,505	6,622	6,400
Domestic	9,997	8,227	7,909	7,153	7,090	6,505	6,622	6,400
Imported								
Lakes States, total	3,052	2,900	2,919	2,456	2,637	1,969	2,796	2,241
Domestic	2,343	2,154	2,239	1,954	2,175	1,409	1,983	1,561
Imported	709	746	680	502	463	560	813	680
Pacific Northwest (2)	3,482	3,734	2,784	2,596	2,750	2,561	2,948	2,918
Domestic	3,256	3,581	2,642	2,470	2,636	2,458	2,616	2,585
Imported	226	156	142	126	114	103	231	332
Consumption, total	21,180	19,714	17,818	16,912	16,754	15,645	17,275	16,580
Northeast	3,815	3,740	3,466	3,245	3,159	3,265	3,530	3,515
Appalachian	1,767	1,685	1,501	1,444	1,490	1,442	1,498	1,420
South	9,442	8,395	7,516	7,208	7,153	6,342	6,804	6,227
Lake States	2,812	2,725	2,554	2,544	2,474	2,325	2,471	2,398
Pacific Northwest (2)	3,344	3,171	2,781	2,472	2,482	2,271	2,972	3,019
Inventories, total (3)	5,622	4,563	3,780	2,627	2,819	2,846	3,392	3,729
Northeast	1,644	1,440	4,063	869	700	820	1,119	1,218
Appalachian	397	372	422	206	279	280	423	439
South	828	291	526	145	218	293	126	334
Lake States	1,674	1,486	1,350	986	1,088	962	1,313	995
Pacific Northwest (2)	1,079	974	419	420	534	491	410	742

Detail may not add to totals because of rounding.

(2) Converted 600 board feet equal 1 cord.

(3) End of year.

Source: Bureau of the Census, except 1941-1944 inclusive, which is by Forest Products Bureau, War Production Board.

### U. S. PULPWOOD CONSUMPTION BY REGIONS

(1921-1940)

(In Thousands of Cords—and Percentage of Total)

	New England	Middle Atlantic	Lake States	Pacific Coast	All Other States*	
	Th. cds.	Pct.	Th. cds.	Pct.	Th. cds.	Pct.
1921	1,345	29.5	1,107	24.3	1,218	26.7
1925	1,713	28.1	1,328	21.8	1,609	26.4
1930	1,513	21.1	1,116	15.5	1,679	23.3
1932	969	17.2	675	12.0	1,224	21.7
1935	1,096	14.4	788	10.3	1,454	19.1
1938	1,336	14.5	810	8.8	1,496	16.3
1939	1,660	15.3	891	8.2	1,658	15.4
1940	2,080	15.1	1,064	7.7	1,866	13.6

\*Chiefly Southern.

Source: Bureau of the Census: 1941-1944.

### Domestic and Foreign Pulpwood Consumed in the United States by Decades, 1860-1939

Decade	Total	Domestic	Imported	Per Cent of Total Imported
	1,000 cords	1,000 cords	1,000 cords	
1860-69	15	15	—	—
1870-79	215	215	—	—
1880-89	3,120	3,120	—	—
1890-99	12,845	11,000	1,845	14
1900-09	30,758	24,601	6,157	20
1910-19	47,981	39,248	8,733	18
1920-29	62,277	50,780	11,497	18
1930-39	79,678	70,598	9,080	11
Total	236,889	199,577	37,312	16

forest fire protection and supervision, the use of intelligent timber harvesting practices, the leaving of pine seed trees as required by law, and an accelerated reforestation program will probably correct the overcutting and about equalize the

supply with present demand.

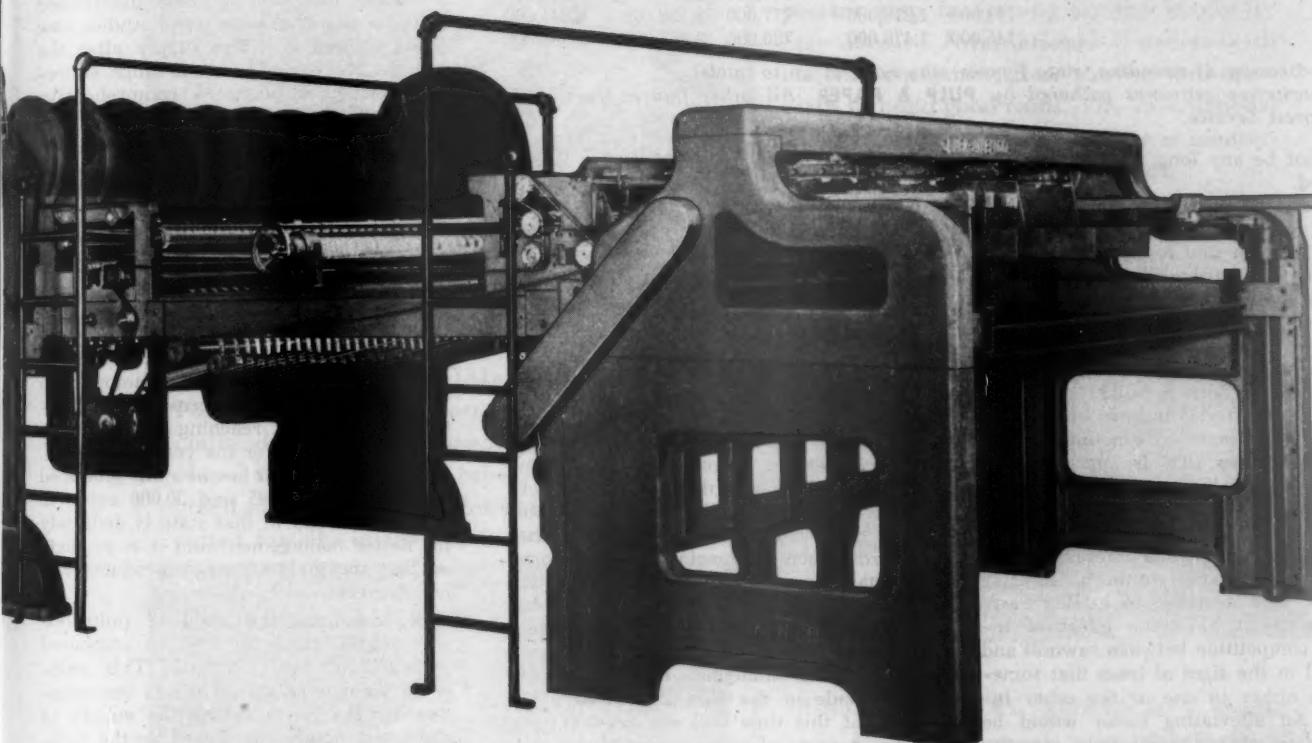
In North Carolina it is said that with reasonable forest practice, the forest land growth can be doubled. On this premise it is felt that if the present trend and interest of land owners continues, there

16,458  
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6,400

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680  
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3,515  
1,420  
6,227  
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3,019  
3,729  
1,218  
439  
334  
995  
742

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## PULPWOOD PRODUCTION STATISTICS FOR SOUTHERN STATES (In Cords)

	Virginia	North Carolina	South Carolina	Georgia	Florida	Southeast Total
1946	971,000	709,000	1,002,000	1,143,000	865,000	4,711,000
1947	1,025,000	765,000	948,000	1,215,000	881,000	4,835,000
1948*	1,100,000	650,000	975,000	1,300,000	900,000	4,925,000
	Oklahoma	Texas	Arkansas	Louisiana	Total	Southwest Total
1946	13,300	616,000	577,000	787,000	1,993,000	
1947	29,900	711,000	596,000	870,000	2,207,000	
1948*	30,000	637,000	637,000	960,000	2,377,000	
	Tennessee	Mississippi	Alabama	Total	Total	Mid-South All-South Total
1946	135,000	1,238,000	756,000	2,130,000	8,844,000	
1947	141,000	1,279,000	777,000	2,198,000	9,241,000	
1948*	145,000	1,476,000	780,000	2,401,000	9,663,000	

Note—Because of rounding, state figures may not add up to totals.

\*Authoritative estimates gathered by PULP & PAPER. All other figures from U. S. Forest Service.

should not be any long term shortage of pulpwood.

In South Carolina the danger of decreased forest supply is thought of as being largely in saw log size material in both pine and hardwood. There is considerable interest manifested in the conversion of pine land to hardwood during the past decade. A lot of this new hardwood growth is of undesirable species. Also there has been a build up in volume of cull material in saw timber size trees. The decrease in amount of pine saw timber since 1936 is approximately 12.2%, the overall decrease in saw log size timber is approximately 10.0%. This changing picture of pine to hardwood has been the subject of quite interesting discussions in recent southern forestry meetings. The decrease in quality sawlog sizes might have the effect of increasing competition between sawmill and pulp mill in the sizes of trees that sometimes go either to one or the other industry. An alleviating factor would be the erection of additional pulp capacity using hardwoods as a source.

It is believed in Virginia that if operators and land owners carry out the continuing effect of reforestation movement there will exist in the future a supply for present pulp mill capacity plus a 20% increase. In North Carolina it is felt there might be room for one more pine mill, but there is considerable room for expansion in hardwood pulp capacity.

Indications in South Carolina based upon the great increase in pole size trees in the Piedmont Section affords the basis for an optimistic view for the long term supply.

### The Mid-South States

From the block of Mid-South states composed of Tennessee, Mississippi and Alabama, there appeared to be little change during 1948 over that of 1947. The major increase in consumption being scheduled for 1949 and 1950, the expansion of mill capacity is still to make itself felt in the raw materials field. In 1946, the three states produced 2,130,000 cords which was increased 3% to 2,198,000 cords. Among these three states, Mississippi is the most important producer

of pulpwood—in fact, being the largest in the South. Mississippi produced 1,279,000 cords in 1947 and 1,476,000 cords in 1948. In Alabama the pulpwood production for the respective years was 777,000 cords and 780,000 cords. Tennessee's production, 141,000 in 1947, is well divided between pine, chestnut and hardwood, it being recalled that the chestnut is going out because of blight.

While Mississippi's wood pulping capacity is not large (57% of its pulpwood moving to out of state plants) its situation in respect to future yield is of importance. It is felt there that considering the utilization of the small diameter class by portable sawmills and the other hazards, such as mortality from storm, insects, disease and fire, the continuation of pulpwood procurement at the rate experienced in 1948 might tend to create a shortage of softwood, but not necessarily in the immediate future. The efforts made in the past and those being made at this time will not prevent long term shortage of pulpwood in Mississippi. The practices throughout the state have improved considerably but are not in keeping with the trend that has been taking place. For the past 8½ years, a total of 8,651,306 cords of pulpwood were produced in Mississippi.

An outstanding forest authority in Mississippi says: "If better forest management practices are applied by all wood using industries, we will not only have sufficient source of pulpwood material in Mississippi for our present industries, but would have an adequate source for additional industries. The law of supply and demand which is determined by the economic trend will be one of the most important factors affecting our timber source. I do not believe that it is possible at this time to foresee this trend, and its future effect, but I do believe that we will have to adopt better management practices to assure our industries of a dependable and continuous source of products with the anticipation of these trends."

In Alabama, the industry has the advantage of access to large acreages under good forest management by lumber companies with ownership in fee simple. Au-

thorities in that state see no hazard of pulpwood shortage in the near future, nor do they anticipate any danger of long term embarrassment of supply. It is felt that there could be room for future pulp mill expansion in the state even though the drain from the big newsprint mill at Childersburg will not be felt until 1950. The enlarged capacity of the mill at Tuscaloosa was not felt in full during the year just closed. What opportunity may be presented in the state for greater pulping capacity would of course be involved in forest cutting practices.

In Tennessee it is felt that the pulpwood situation for the next 20 years is a matter that will be best determined from results of growth trend studies now being carried on. The supply after the current 20-year period will hinge entirely on whether or not a comprehensive program of adequate fire control, reforestation of idle lands, and integration of pulpwood with sawlog production is effected.

### West of Mississippi

Production of pulpwood in the states west of the river show a further substantial increase in 1948, continuing the upward progression of the previous years. Production for Oklahoma, Texas, Arkansas and Louisiana in 1946 amounted to 1,993,000 cords which increased to 2,207,000 cords in 1947, reaching approximately 2,400,000 cords for the year just closed.

Oklahoma, which has no mill, produced 29,900 cords in 1947 and 30,000 cords in 1948. The trend in that state is definitely for better management and it is predicted that the yield of woods products will not decrease.

In Louisiana, the yield of pulpwood was 960,000 cords in 1948 as compared with 870,000 cords in 1947. This pulpwood yield is added to in mill consumption by the fairly substantial supply of slabs and veneer cores used by the mills. In this state it is felt there is no need for alarm as to the danger of pulpwood shortage. There is still a lack of balance between supply and consumption and pulp mill expansion, if not rushed too rapidly would not overtax the supply. The opinion is held in the state that a good demand and ready market for products at a fair price offer the greatest inducements for the grower to increase production.

In Arkansas the pulpwood supply continued to expand with a production of 637,000 cords in 1948 as compared with 596,000 cords in 1947. The opinion in this state is that there is an adequate short term and long term supply of pulpwood and that the future will be well taken care of.

The Texas forests are important to mills both in that state and in Louisiana since between one-third and one-half the pulpwood crosses the line. Texas produced 711,000 cords in 1947, and though data is lacking the 1948 yield is placed as having been still higher. A high forest opinion in Texas says there will probably be a stumpage shortage in the near future, an opinion based on the extensive

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acreage having a low volume of merchantable sized stumps and scarcity of reproduction. The large tracts in productive or highly productive condition in Texas are closely held, a situation forecast by **PULP & PAPER** several years ago in which it was predicted that the forest field there would be divided into "the haves" and "the have-nots."

In many areas of Texas there is reproduction developing that with adequate protection will get into merchantable size in the period 10 to 15 years from today. In view of this it is rather doubtful, on the basis of present consumption, whether there is any danger of a long term shortage of pulpwood. A primary factor in this situation is the trend for close working relationships between the pulp mill and lumber industries.

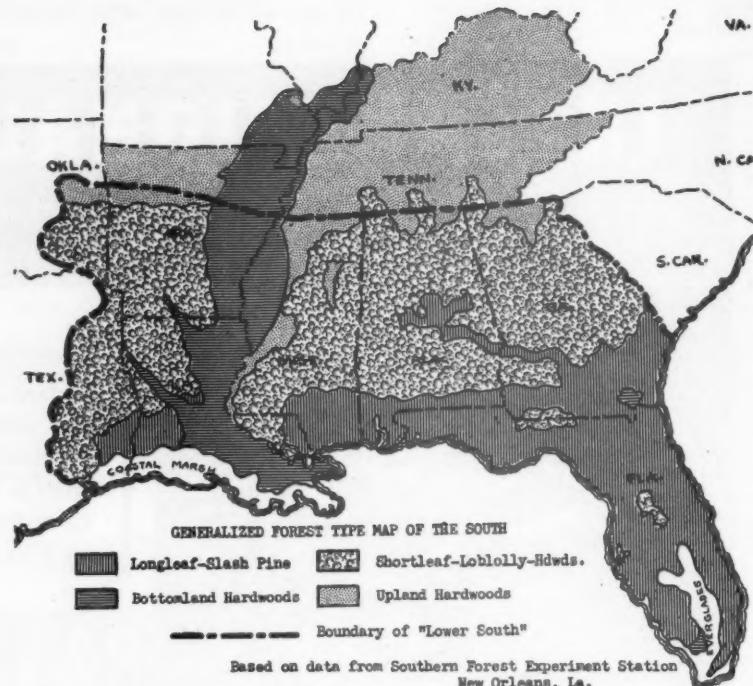
In terms of pine consumption, for the next decade at least the pulp expansion in the South should be on a limited scale, inasmuch as there has just been concluded an expansion of productive capacity. It is doubtful whether the timber supply in the area west of the Mississippi River can justify a similar production capacity surge within the next decade. It is possible that after the next decade or decade and a half, timber supply will warrant increased production facilities.

#### Hardwood Problem

Hardwood reversion is not the problem of a single state but exists in a forest strip according to geographical and climatic conditions from Virginia southward into Georgia. In Georgia a predominating supply factor is the diversification of ownership into myriads of small acreages. This factor eases to a certain extent as you go westward, but the element of hardwood competition with pine creeps back into the picture.

Combatting of hardwood intrusion in stands where the owners want pine is not limited to any state in the South. Methods used include harvesting of low quality hardwoods whenever possible even on a saw dollar basis, mechanical suppression, poisoning or girdling. The study of costs of girdling or cutting of unmerchantable low grade hardwoods that overtop young pines, conducted by Crossett Experimental Forest, has revealed this as not an excessively expensive procedure. Based on 60c per hour for labor and 19.8c per hour supervision, transportation equipment, social security taxes, workmen's compensation insurance, and unemployment fees it was found that costs ranged from 3.8c per tree for 1-inch dbh to 7.4 inch dbh. Trees under 6-ins. were chopped down. In 7 years the released pines produced 1½ cords of pulpwood per acre compared with only 0.1 cords for unreleased stands. With cost of girdling or poisoning at \$1.79 per acre the stumpage value gained in 7 years easily offset the initial cost with further gains to come.

That both pulp and lumber industries in the South are working hard to bring about fully stocked stands by planting as well as by other means is well known. The current private capital work was pre-



ceded by state and federal agencies not only to establish the general profitability of such work but also by comparative tests the most suitable spacings of seedlings in plantations expressed in volume of yield. In 1932 the Alabama Agricultural Experiment Station set out some test plantings ranging from 4x4 feet to 16x16 feet. After a 14-year period it reported the 6x6 spacing as producing the most merchantable wood from slash and loblolly plantations.

The 6-by-6 stands that were thinned in 12 years yielded 4.2 cords of pulpwood per acre from slash pine and 2.4 cords from loblolly. The remaining trees averaged slightly smaller but about equal in number and superior in quality to unthinned spacing 8x8 feet.

Extended tests made in Texas with slash pine plantations have proven successful, and have resulted in extending the territory of this variety which has long been popular in the Southwest for fast growing qualities and turpentine.

In Texas, in 1940, identical plots were set out in one-year slash seedlings. One plot was cultivated prior to and subsequent to setting the seedlings to prevent competition with weeds and other vegetation. After three years the cultivated acreage carried trees of 15.7 foot average height as compared with 11.5 on uncultivated acreage. Diameters averaged 3.0 on cultivated compared with 1.9 on the other.

The Southern and Southeastern Forest Experiment Stations in their reappraisals of the forest stand in 1946 to determine trends since the original inventory of a decade previously found in many places that the younger growths had shown much gain. This, of course, was credited to more fire protection and better forestry methods of land owners.

The Southern Forest Station recently completed a field study of Mississippi,

and while the full results are not available, certain conclusions have become evident.

For one, the forest area has been extended by 1.7%, largely because abandoned agricultural lands in the north Mississippi have gone into the woods. This was estimated at about 750,000 acres.

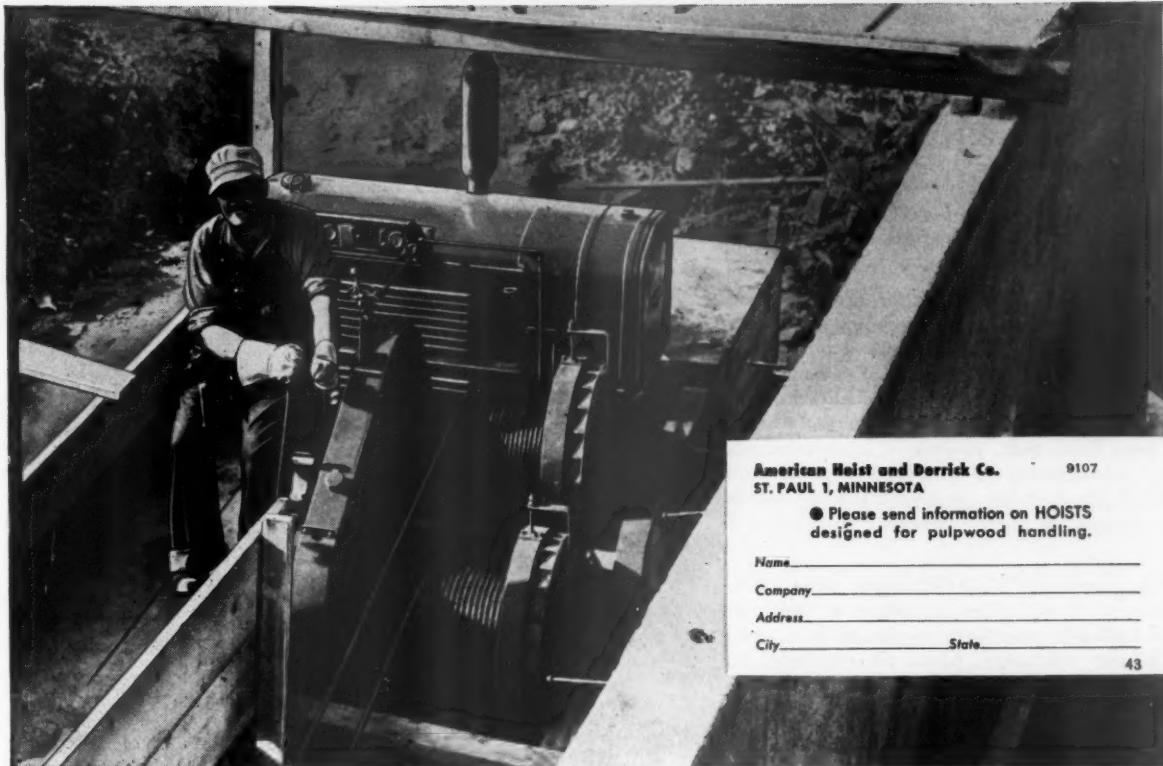
Of particular interest is that on a count of numbers of trees it was found that in pine there was an increase of 17% in the total of those in the 6-inch d.b.h. class, 2% in the 8-inch d.b.h. class, with a decline above those diameters.

In hardwoods the increase in numbers of trees of the 6-inch d.b.h. class was 44%; of the 8-inch class, 66%; of the 12-inch class, 17%; of the 16-inch class, 6%. The decrease in number of hardwoods trees began with the 18-inch and above.

The Mississippi study showed the lumber concentration yard as the worst offender from the standpoint of good forest cutting practice. The next worst was the farmer who owned a portable sawmilling rig.

Interviewers in Mississippi asked pointed questions of land owners and one was whether advice from a trained or professional forester would be welcome. To this 68% replied that they wanted no advice from a professional forester, whether free or otherwise.

This came as no surprise, but tends to silhouette the progress achieved by federal, state and private foresters, with the backing of industry. These have worked assiduously to induce the public to accept good forest practice. That there are 32% of forest land owners willing to listen to good advice on tree-land management is somewhat of an achievement (all factors considered), and it is to this ownership we will look for the production of trees for industry in future years. This percentage is growing.



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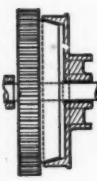
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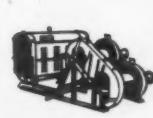
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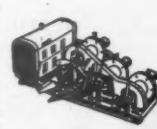
Utility Hoist  
300 lbs. S.L.P.



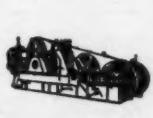
Single Drum Hoist  
2,500 lbs. S.L.P.



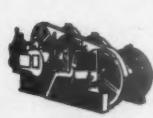
Double Drum Hoist  
7,500 lbs. S.L.P.



Three Drum Hoist  
10,000 lbs. S.L.P.



Four Drum Hoist  
25,000 lbs. S.L.P.



Three Drum Hoist  
40,000 lbs. S.L.P.

# — CANADA'S FOREST RESOURCES —

Source: Dominion Forest Service

## Record 1948 Production

In pulpwood supply the Canadian industry is in a better position now than for many years. Production east of the Rockies during the past year was the largest in history, totaling some 11,000,000 cords. Production of pulpwood was also increased in British Columbia, where logging is a year-round operation rather than a seasonal one as in the east.

Increase in pulpwood production during 1947-48 ran to a little more than 19% over the preceding season and 29% more than in 1945-46. The increased output was needed not only to meet rising output of the mills but to augment wood inventories which had declined during the war years. The inventory position is currently better than it has been since 1942. Release of labor from war industry and immigration of displaced persons from Europe, 5,000 of whom found employment in the woods, were partly responsible for the improved production of pulpwood.

Of a total production of 11,100,000 cords, some 7,700,000 cords were produced by the companies in their own holdings and 3,400,000 cords were purchased from independent pulpwood producers. About two-thirds of the cost of wood consists of wage payments, according to an official industry estimate. East of the Rockies, where about 90% of the pulpwood consumed is harvested, average weekly wage earned by loggers was 48% more than in 1946, and 14% higher than in 1947. Wages of wood workers in Canada are today at an all-time high. Living conditions for the woods workers have also been improved at considerable cost. In the east there is an unmistakable trend towards more mechanization in pulpwood harvesting.

A recent survey of the industry indicated that the annual consumption of softwoods, including the dead wastage caused by fire, insects and disease, runs to about 1.7%, or about one-sixteenth of the present softwood stand. Annual consumption in both accessible and inaccessible forests appears to be about 1.1% of the total softwood resources of Canada. Most experts estimate a rate of regrowth in the forest of about 60 to 80 years, depending on the area involved.

Whatever the balance may be, the utilization of softwoods from the Canadian forests can still be increased and yet produce a perpetual harvest by a variety of means, including: 1. Extension of the cut into the forest areas now classified as inaccessible; 2. A reduction of wastage by fire, insects and disease which now account for 25.9% of the average annual consumption

## CANADIAN PULPWOOD SPECIES — CURRENT ESTIMATED VOLUMES

(Provided for this issue of PULP & PAPER by the Dominion Forest Service)  
Material of Sawlog Sizes\*

In Millions of Board Feet†

	Spruce	Balsam	Jack and Lodgepole Pine	Hemlock	Poplar	Total
Prince Edward Island	75	25		684	5	105
Nova Scotia	2,714	789	248	210	3	4,192
New Brunswick	3,102	1,202	1,847	72	2,340	4,762
Quebec	32,286	17,701	11,914	793	3,292	54,446
Ontario	27,901				3,292	43,900
Manitoba	778	5	71		1,610	2,464
Saskatchewan	2,960	30	620		2,420	6,030
Alberta	9,000	400	3,000		4,500	16,900
British Columbia	50,222	31,484	9,782	56,662		148,150
Total	129,038	51,636	27,482	58,421	14,372	280,949

### Smaller Material‡

In Thousands of Cords

Prince Edward Island	600	80		5	10	695
Nova Scotia	6,702	15,639	26	256	840	23,463
New Brunswick	30,383	16,286	2,217	66	3,943	52,895
Quebec	513,397	287,747	40,048	1,048	22,079	864,319
Ontario	209,217	29,223	61,713	500	125,073	425,726
Manitoba	6,877	385	3,233		18,800	29,315
Saskatchewan	8,290	355	2,830		53,800	65,275
Alberta	30,000	1,550	90,000		90,000	231,550
British Columbia	84,995	69,936	313,201	20,460		488,392
Total	910,461	421,201	513,288	22,335	314,345	2,181,830

### Total Pulpwood Species

Equivalent Volumes in Millions of Cubic Feet of Standing Timber  
(Includes Sawlogs and Smaller Material)

Prince Edward Island	86,625	14,835	585	2,045	104,090
Nova Scotia	1,378,500	2,002,554	3,042	179,748	3,644,739
New Brunswick	6,234,149	2,168,700	313,701	53,712	7,144,847
Quebec	67,138,083	37,542,918	5,090,109	138,384	2,653,765
Ontario	30,588,708	3,419,091	9,829,587	232,167	12,602,883
Manitoba	974,991	46,140	396,150		2,138,590
Saskatchewan	1,618,170	48,105	466,890		5,640,980
Alberta	7,821,000	268,950	11,187,000		9,335,500
British Columbia	20,943,033	15,077,508	38,786,775	14,802,798	28,812,450
Total	134,783,259	60,588,801	66,073,254	15,407,394	33,029,243
					309,881,951

\*Probably only a minor portion of this wood will be used for pulp.

†Approx. 500 bd. ft. equals one cord. Very little of this, however, is cordwood or pulpwood. The total figure in this table, 280,949 million bd. ft. equals about 562 million cords.

‡Mostly pulpwood.

Square Miles

1,290,960

Forest Volume

In 000,000's of cubic feet of merchantable timber in the Productive Forest Areas	
Accessible Forests:	
Conifers	132,712
Broad leaved	58,635
Presently Inaccessible Forests:	
Conifers	107,531
Broad leaved	12,323

### Forest Holdings

In accessible Productive Forests

	Sq. Miles	Per Cent
Private holdings	100,175	23
Crown Lands		
Leased by pulp and paper cos.	127,030	29
Leased by others	42,215	10
Unoccupied	165,580	38
Accessible Productive Forests	435,000	100

### Coniferous Stands

	Estimated Stands of Accessible Conifers by Provinces	Millions of cubic feet	Pulp Production Tons — 1947
Prince Edward Island	61	nil	•
Nova Scotia	2,939	•	
New Brunswick	5,450		
Quebec	46,755	3,751,579	
Ontario	31,764	2,100,237	•
Manitoba	991		
Saskatchewan	1,128	nil	
Alberta	7,724	nil	
British Columbia	35,880	593,165	
N.S., N.B. and Manitoba	•	808,690	
Total	132,712	7,253,671	

\* Figures for N.S., N.B. and Manitoba are not compiled separately.

### Forest Consumption

Average Annual Depletion 1935-1945			
	000's of cu. ft.	%	%
Logs and bolts	930,338	28.2	38.1
Pulpwood for domestic use	566,212	17.2	23.2
Pulpwood for export	158,885	4.2	5.7
Firewood	717,104	21.7	29.4
Ties, poles, pit-props, posts, rails	59,927	1.8	2.4
Miscellaneous	30,761	1.0	1.2
	2,443,223		100.0
Fire	353,347		
Insects and disease	500,000	853,347	23.9
			100.0
	3,296,772		

# ANALYZE and MECHANIZE WITH Lorains!

## TL-20 FEATURES

1. All Weather, All Year-Round Operation.
2. Convertibility to Shovel, Clam, Drag, Hoe.
3. 2-Speed Crawler or 9 Rubber-tire Mountings.
4. Starter, Generator, Lights are Standard Equipment.
5. Unit Assembly for Easier Service.
6. 5 Identical Clutches.
7. Anti-Friction Bearings.
8. Oil Enclosed Gear.
9. Interchangeable Parts.

• This Lorain TL-20 crane replaced costly hand labor on the job of transferring pulpwood from trucks to barges for shipment to the mill 150 miles away.

Equipped with a specially designed 4-legged bridle sling, the TL-20 does the job *fast and neatly at less than  $\frac{1}{2}$  the former cost* in handling pulpwood alone.

Additional savings result because delivery trucks are unloaded at 4 minute instead of 40 minute intervals—no traffic jams—and trucks are back to the woods for more, sooner. Barges are loaded in one day instead of 6 days, eliminating the tie-up of expensive floating equipment.

It pays to *Analyze and Mechanize with Lorains*—and your nearest Thew-Lorain distributor can show you how. Ask him or write directly to—The THEW SHOVEL CO., LORAIN, OHIO.



**Get the facts!**  
Send for this descriptive bulletin on Lorains handling pulpwood.



CRANES • SHOVELS  
DRAGLINES  
MOTO-CRANES

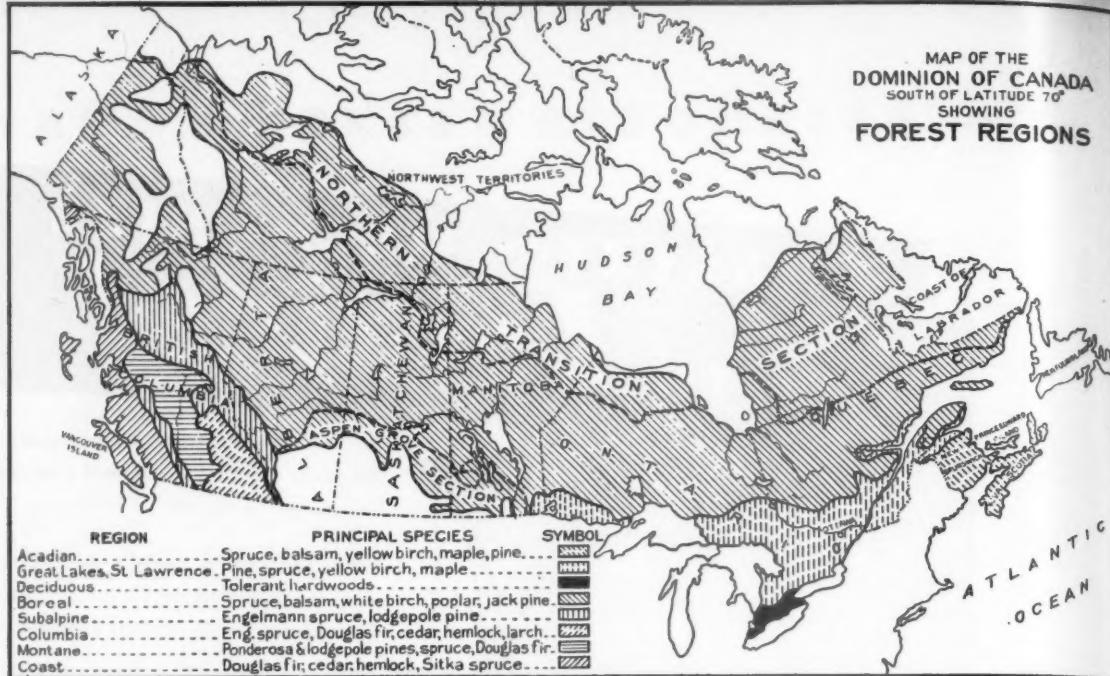
THEW

# Lorain

as compared with 17.2% consumed by the Canadian pulp and paper mills; 3. Reduction of the exports of pulpwood and other softwoods in a raw state.

Only two other countries in the world possess greater forested areas than Canada—Soviet Russia and Brazil.

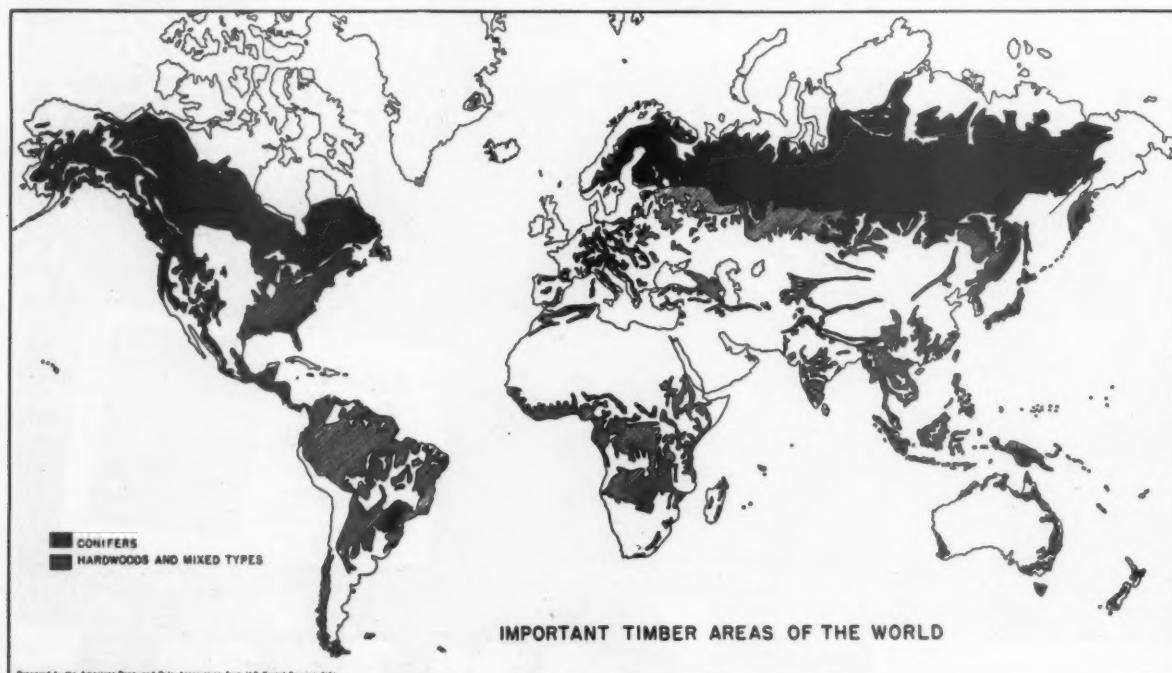
In eastern Canada the drain on these resources has been well within the extent of natural regeneration of the forest and on the west coast where a long-term program for sustained yield is now being evolved there appears to be more timber suitable for pulpwood than for almost any other purpose.



#### AVAILABLE MERCHANTABLE TIMBER BY AGE CLASSES AND SPECIES M. B. F. SCRIBNER

(American Forestry Association Survey Completed in 1946)

	(1) Douglas Fir		(2)		(3)		(4)		(5)		(6)	
	Old Growth	Big Second Growth	Small Second Growth	Big Sitka Spruce	Small Sitka Spruce	Big Hemlock	Small Hemlock	True Firs	Cedars	Hard-woods	Miscellaneous	Total
Puget Sound—East	10,980,000	3,629,000	1,036,000	175,780	3,760	18,841,000	2,519,000	11,715,330	6,715,330	326,921	1,232,143	56,639,264
Olympic	7,856,000	982,000	845,000	3,651,000	167,000	19,876,000	2,690,000	7,167,000	6,024,547	290,355	145,610	49,694,437
Columbia River—North	26,622,000	9,884,000	3,440,000	1,608,000	384,000	14,320,000	3,574,000	7,930,000	3,506,068	317,539	1,002,127	71,477,536
Washington Total	45,458,000	14,495,000	5,321,000	5,434,780	554,760	53,037,000	5,783,000	26,812,000	15,710,775	934,815	2,379,880	177,811,237
Columbia River—South	14,727,000	3,509,000	1,313,000	1,687,000	446,000	7,604,000	1,443,000	2,870,000	910,368	292,413	1,190,072	36,095,343
Upper Will.-Cent. Coast	55,700,000	25,207,000	4,568,000	128,000	100,000	7,956,000	837,000	3,010,000	1,948,856	611,152	2,444,795	102,775,644
Umpqua	55,520,000	18,300,000	5,095,000	1,109,000	26,000	1,447,000	158,000	2,695,000	2,295,792	979,155	5,165,990	89,285,502
Rogue	19,370,000	1,645,000	1,033,000	40,000	10,000	14,000	14,000	4,040,000	889,231	544,585	5,229,372	35,102,865
Oregon Total	143,517,000	49,161,000	12,009,000	3,244,000	602,000	17,117,000	2,452,000	12,618,000	6,044,247	2,427,305	12,030,220	261,259,351
Grand Total—Wash. and Oregon	188,975,000	63,656,000	17,330,000	8,698,000	1,156,000	70,154,000	11,235,000	39,430,000	20,859,000	3,362,000	14,409,000	439,070,588



IMPORTANT TIMBER AREAS OF THE WORLD

Prepared by the American Paper and Pulp Association from U.S. Forest Service data

**MAP ISSUED ON WORLD FOREST AREAS** by American Paper & Pulp Assn.  
Except for small area in Brazil, all coniferous timber, principal material for pulp and paper, is in Northern Hemisphere. Mercator's projection of globe greatly exaggerates extreme northern areas, where coniferous timber is located. Transportation difficulties face use of timber in Hudson Bay area and Siberia.

Sources: Canada—Dominion Forest Service, 1946. U. S.—U. S. Forest Service, July 1946. Russia—Soviet Minister of Forest Industries, article in "Ogonjok" in 1946. Scandinavia—Report to Canadian Pulp and Paper Assn. by Drs. Allen C. Hill and W. B. Campbell, 1946. Europe (other)—U. N. Food and Agricultural Organization, 1946.

#### Data on timber in northern areas:

	Forest Areas (Millions of Acres)	Timber Stands (Millions of Cu. Ft.)
Canada (accessible productive)	268	191,347 (a)
(inaccessible productive)	242	119,854 (a)
Total Canadian	510	311,201 (a)
U. S. (commercial forests)	461	470,045 (b)
Russia (including Siberia)	2,471	1,590,000 (b)
Scandinavia (productive)	137	103,000 (a)
Other European	190	Not available
(a) Merchantable timber. (b) All timber.		

HERE'S one of the practical ways pulpwood producers can help keep logs coming out of the woods to assure the mills a year-round supply of material—rain or shine. Skidding them out in tree lengths is another. Either way, the key, of course, is in the machines that do the pulling—those powerful "Caterpillar" Diesel Tractors with their broad, deep-grousered tracks that can ride and grip the softest mud; and with engine and bearing seals that enable them to wade "hip deep" through rain-fed swamps without gumming up their working insides.

Yes, "Caterpillar" track-type Tractors are indeed an important solution to the pulp and paper industry's log-supply problems during the rainy spells. They can go in where wheel-equipment must "fear to tread." And in addition to skidding work, they're handy for boosting trucks over soft spots, building trails and haul roads.

Your "Caterpillar" dealer can help you survey your particular problems toward providing the right equipment for gathering pulpwood more steadily and more cheaply.

CATERPILLAR TRACTOR CO. • San Leandro, Calif.; Peoria, Ill.

# Tractor totin' a bundle

SOUTH CAROLINA — Arch-skidding bundled pulpwood ( $\frac{1}{2}$  cord) through flooded woods to semi-trailer loading point for hauling to rail siding.



## U. S. FOREST SERVICE'S LATEST RESOURCES SURVEY

The latest Appraisal of U. S. Forest Resources was made in 1945 and 1946 by the U. S. Forest Service.

On this page is published some of the data developed by that survey. It will be noted that by 1944, drain (cutting, fires, disease, insects, etc.) and growth were practically balanced. In the pulpwood species, the growth probably far outstrips drain, because the Forest Service reported that drain was 50% greater than growth in sawtimber species.

The Forest Service "goal" is a growth

of 20 billion cu. ft., instead of less than 14 billion (1944), in order to permit an annual crop of 72 billion bd. ft. of sawtimber. It holds this can be achieved by 2020 A.D. by reducing sawtimber drain by 4 billion ft. for several decades and by intensive good management on 100 million acres and less intensive on 300 million of the 461 million acres available for commercial timber growing. Of this total, 57% is in hands of 4,200,000 owners who have less than 5,000 acres each. Only 4% of these practice good forestry, says the USFS. It visualizes demand annually for 20 million cords of pulpwood in 5 to 10 years, to make 24 million tons of paper. The 1947 cut was about 17 million cords.

### U. S. COMMERCIAL TIMBER In Millions of Cu. Ft. in 1945 (By U. S. Forest Service)

	All Trees	5 in. D.B.H. Pulpwood or over size*
New England:		
Connecticut	967	519
Maine	15,046	6,809
Massachusetts	2,194	1,089
New Hampshire	3,378	1,563
Rhode Island	120	78
Vermont	2,921	1,254
Mid-Atlantic:		
Delaware	441	171
Maryland	1,859	926
New Jersey	1,210	684
New York	9,668	3,807
Pennsylvania	9,570	4,224
West Virginia	4,611	2,316
Lake:		
Michigan	10,300	3,800
Minnesota	5,900	2,900
Wisconsin	7,000	2,900
Central:		
Illinois	1,412	451
Indiana	1,919	397
Iowa	1,904	520
Kentucky	6,826	3,822
Missouri	6,041	4,243
Ohio	2,890	603
Plains:		
Kansas	1,391	911
Nebraska	1,078	828
North Dakota	465	355
Oklahoma (West)		
South Dakota (East)	630	450
Texas (West)	159	112
South Atlantic:		
North Carolina	14,729	5,312
South Carolina	9,685	3,156
Virginia	11,551	5,308
Southeast:		
Alabama	13,620	6,208
Florida	7,239	3,345
Georgia	15,237	6,322
Mississippi	12,131	4,992
Tennessee	5,993	2,332
West Gulf:		
Arkansas	15,187	6,845
Louisiana	13,933	5,263
Oklahoma (East)	1,303	648
Texas (East)	10,266	4,309
Pacific Coast:		
Oregon	85,213	16,917
Washington	60,666	16,383
California	44,600	3,350
North Rocky Mountain:		
Idaho	14,024	4,055
Montana	14,137	5,896
South Dakota (West)	868	294
Wyoming	4,321	2,050
South Rocky Mountain:		
Arizona	2,924	468
Colorado	9,617	3,744
Nevada	100	36
New Mexico	1,705	421
Utah	1,096	275
All States	470,045	153,561

### U. S. TIMBER STAND IN 1945 and percentage of desired growing stock to meet Forest Service objectives which it represents.

	Billion cu. ft.	Percent Growth Stock
New England	25	78%
Middle Atlantic	27	57%
Lake	23	66%
Central	21	40%
Plains	4	100%
 NORTH	100	59%
South Atlantic	36	106%
Southeast	54	63%
West Gulf	41	69%
 SOUTH	131	73%
Pacific Northwest:		
D. fir subregion	117	107%
Pine subregion	29	97%
 TOTAL	146	105%
California	45	100%
North Rocky Mt.	33	79%
South Rocky Mt.	15	79%
 WEST	239	98%
 UNITED STATES	470	79%

### FOREST SERVICE GOAL

#### All Timber

	Billion cu. ft. Growth goal	1944 growth
New England	1.14	0.90
Middle Atlantic	1.64	1.40
Lake	1.15	.81
Central	1.73	1.44
Plains	.12	.12
 North	5.78	4.67
South Atlantic	2.14	1.76
Southeast	4.80	2.71
West Gulf	3.20	1.92
 South	10.14	6.39
Pacific Northwest:		
D. fir sub-region	2.17	1.02
Pine subregion	.38	.22
 Total	2.55	1.24
California	.64	.33
North Rocky Mt.	.65	.54
South Rock Mt.	.24	.20
 West	4.08	2.31
 All Regions	13,370	13,661
 United States	20.00	13.37

### VOLUME OF TIMBER ON COMMERCIAL FOREST LANDS OF UNITED STATES As of 1945, According to Re-Appraisal by U. S. Forest Service (In Millions of Cubic Feet—128 cu. ft. to one cord)

Region*	All trees over 5 in. D.B.H.			Trees too small for sawtimber, large enough for pulp- wood—over 5 in. D.B.H.**		
	Total	Soft- wood	Hard- wood	Total	Soft- wood	Hard- wood
New England	24,626	11,318	13,308	11,312	4,667	6,645
Middle Atlantic	27,359	5,376	21,983	12,128	2,545	9,583
Lake	23,200	7,000	16,200	9,500	2,800	6,700
Central	20,992	1,479	19,513	10,036	933	9,103
Plains	3,723	269	3,454	2,656	179	2,477
North	99,900	25,442	74,458	45,632	11,124	34,508
South Atlantic	35,965	17,031	18,934	13,776	4,595	9,181
Southeast	54,220	23,841	30,379	23,199	8,013	15,186
West Gulf	40,689	17,460	23,229	17,065	5,953	11,112
South	130,874	58,332	72,542	54,040	18,561	35,479
Pacific Northwest						
Douglas fir sub-region	117,222	115,499	1,723	26,619	25,573	1,046
Pine sub-region	28,657	28,623	34	6,681	6,663	18
TOTAL	145,879	144,122	1,757	33,300	32,236	1,064
California	44,600	44,600	.....	3,350	3,350	.....
North Rocky Mountain	33,350	32,926	424	12,295	12,070	225
South Rocky Mountain	15,442	14,575	867	4,944	4,263	681
West	239,271	236,223	3,048	53,889	51,919	1,970
All regions	470,045	319,997	150,048	153,561	81,604	71,957

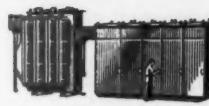
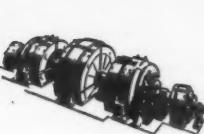
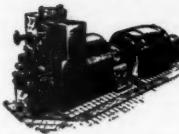
Volume does not include bark. Includes volume on land capable of producing timber of commercial quantity and quality and available now or prospectively for commercial use.

\*See other table on page 106 for states included in regions.

\*\*But may be saved for sawtimber. Up to 9-13 in. D.B.H. in East and South and up to 15 in. D.B.H. generally in West.

*Here's what  
Allis-Chalmers  
builds for . . .*

# Pulp and Paper



**STEAM TURBINES** — From 10 hp to 200,000 hp . . . for mechanical drives and for turbine-generator units. Hydraulic turbines in Francis, propeller and impulse types specially designed. Gas turbine units to 10,000 kw. Also surface condensers, air ejectors, deaerating heaters, water conditioning equipment and service.

**GENERATORS** — Allis-Chalmers builds a-c and d-c gen-

erators of all commercial characteristics and practical capacities . . . turbo, water wheel, engine, coupled and belted types.

**TRANSFORMERS** — Allis-Chalmers builds transformers to meet any power distribution requirement. Oil and non-inflammable liquid-filled. transformers available from 1½ kva to largest power types; dry-type from 1½ to 2000 kva.

**SWITCHGEAR** — All types, indoor and outdoor, with circuit breakers to suit application; switchboards of all types custom built; circuit breakers from 15,000 kva to 3,500,000 kva I. C.

**UNIT-SUBSTATIONS** — Factory built, metal enclosed unit substations built for indoor or outdoor operation. Load Center units can be installed on balconies or in other space saving locations.

**MOTORS** — You can depend on Safety Circle Motors for all power drives of one hp and up. Available in all most-used



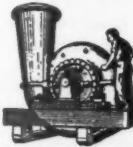
types: squirrel cage, wound rotor, synchronous, direct current . . . with electrical and mechanical modifications to fit the job.

**MOTOR GENERATORS** — Standard and special motor generator sets for supplying power to d-c drive motors and other d-c equipment. Can be supplied in ratings of 1 KW and larger.

**MOTOR CONTROL** — Standard line for every requirement:

manual or magnetic, reversing and non-reversing; across-the-line; reduced voltage; single or multi-speed. NEMA sizes.

**V-BELT DRIVES** — Super-7 Texrope belts and Texrope sheaves are available in sizes and types to suit every application from fractional hp to 3000 hp . . . variable speed from fractional to 300 hp. New Magic-Grip sheaves quickly installed or removed.



## BLOWERS, COMPRESSORS

— Allis-Chalmers builds Rotary Sliding Vane type Vacuum Pumps for vacuums from 2½ to 28½" Hg. and volumes from 14.5 to 5300 cfm; Rotary Sliding Vane type Compressors from 5 to 35 psig, in volumes from 44.5 to 1664 cfm; Turbo-Blowers—single and multi-stage, direct-connected, motor driven—from 1

to 3.75 psig, in volumes from 1600 to 35,000 cfm.

**CENTRIFUGAL PUMPS** — Allis-Chalmers builds sizes and types of pumps to handle from 10 to 600,000 gpm . . . at heads up to 3500 ft and more. Compact Electrifugal pumps have wide application in Pulp and Paper. Also check A-C Fan pumps . . . and new line of chemical handling pumps.



**BARKING EQUIPMENT** — Allis-Chalmers' "Streambarker" hydraulic log barker removes bark from pulpwod sticks of 4 to 18 inches diameter and up to 8 feet long, by means of water under 650 to 800 lb pressure. Capacities range from 8 to 14 cords per hour, depending on condition of wood, season, etc. Allis-Chalmers builds, in its own

shops, the complete Streambarker unit, including barker, pump, motors, controls and bark screen.

**WOOD PREPARATION** — In addition to barking equipment, A-C builds two styles of chip screens; builds cut-off saws, slasher, interplane grinders, de-fiberizers, band mills, log carriages, and other wood preparation equipment.

**COOKING** — Allis-Chalmers builds rotary kilns, slakers, dryers, other equipment for chemical preparation—has vast tank and plate facilities for building digesters, blow tanks, etc.

**WET ROOM** — A-C offers a new vibrating type knotter for use in the pulp-making process; builds other vibrating type screens

for use as Thickeners, for dewatering rejects, screening river refuse, etc.

**PAPER MAKING** — Allis-Chalmers builds special design drives for Paper Machines, Rewinders, Calenders. Also Regulex Control, designed to give paper machines more accurate, sensitive control. A-2683

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# FAR WESTERN WOOD DATA

Periodic pulpwood surveys in Washington, Oregon, Northern Idaho and Western Montana have been special features of **PULP & PAPER** Industry's Review Number each year.

This deals with an important wood industries region of the continent and because these figures have been revised as late as 1949 (in eastern Washington) and 1947 (in western Washington and Oregon) we are presenting them as an unusual feature of this Review. In no other regions of the North American continent are such up-to-date figures available. These were prepared, in part, especially for **PULP & PAPER**.

However, it should be noted that Forest Service tables for Washington and Oregon on these pages do not include Douglas fir, of which there is about 60 billion bd. ft. in trees 4 inches and larger, d.m.b., available for cutting in the region. The Forest Service has left this species out in the preparation of the table for this Review Number, because Douglas fir has been—and still is—the dominant lumber species.

Information is available for Douglas fir resources in the 1946 survey by the American Forestry Association financed by pulp, paper and lumber industries which is also published on page 90.

Douglas fir is rapidly becoming a species of value to the pulp and paper industry. A tremendous use of fast-growing second growth Douglas fir is taking place in the new kraft pulp mills, thanks to the new kraft and bleaching processes. In some mills it will be the dominant pulpwood species.

This species already comprises 50% of raw material for the western kraft pulp and insulating board mills. Most of this is in shape of slabs from sawmills. Both large log and slab hydraulic barkers, being installed extensively in the West, are increasing the use of this species of wood.

Of the available merchantable timber about one-third is second growth Douglas fir, now being used to a large extent by pulp mills with new kraft processes and bleaching techniques.

Total merchantable timber in the Douglas fir region is 439,070,594 board feet (equal to about 850 million cords). This includes also hemlock and spruce, traditional pulpwoods. If no more timber were to grow, that's enough for 60 years, according to AFA inventory.

Results of this inventory indicate an annual minimum sustained yield would total 13.1 billion board feet, if good utilization were practiced. If all forest acres could be brought to good growing capacity, Burt F. Kirkland, in charge of the survey, estimated a 20 billion board feet sustained yield annually (equal to about 40 million cords).

## Forest Service Statistics

Accompanying tables which show the volume in thou-

## Volume In Thousand Cubic Feet<sup>1</sup> of Pulpwood Other Than Douglas Fir In Western Washington and Western Oregon, Available for Cutting,<sup>2</sup> by Species Groups<sup>3</sup>

Adjusted to January 1, 1947

Species—	Western Oregon	Western Washington	Total
Western hemlock	5,280,000	14,879,000	20,159,000
Sitka spruce	757,000	1,057,000	1,814,000
Balsam firs <sup>4</sup>	3,438,000	6,076,000	9,514,000
Mountain hemlock and Engelmann spruce	804,000	313,000	1,117,000
Black cottonwood	71,000	119,000	190,000
<b>Total</b>	<b>10,350,000</b>	<b>22,444,000</b>	<b>32,794,000</b>

Adjusted to January 1, 1946

Species—	Western Oregon	Western Washington	Total
Western hemlock	5,304,000	14,967,000	20,271,000
Sitka spruce	730,000	1,074,000	1,804,000
Balsam firs <sup>4</sup>	3,456,000	6,085,000	9,541,000
Mountain hemlock and Engelman spruce	804,000	313,000	1,117,000
Black cottonwood	72,000	128,000	200,000
<b>Totals</b>	<b>10,366,000</b>	<b>22,567,000</b>	<b>32,933,000</b>

Adjusted to January 1, 1944

Species—	Western Oregon	Western Washington	Total
Western hemlock	5,413,000	15,525,000	20,938,000
Sitka spruce	748,000	1,153,000	1,901,000
Balsam firs <sup>4</sup>	3,425,000	6,011,000	9,436,000
Mt. hemlock, Engelman spruce	804,000	313,000	1,117,000
Black cottonwood	72,000	128,000	200,000
<b>Total</b>	<b>10,462,000</b>	<b>23,130,000</b>	<b>33,592,000</b>

<sup>1</sup>Includes all trees 4 inches and more, diameter breast high.

<sup>2</sup>Excludes timber reserved from cutting in municipal, state and federal ownership.

<sup>3</sup>Compiled by Pacific Northwest Forest and Range Experiment Station from Forest Survey data adjusted for cutting depletion and growth.

<sup>4</sup>Includes Pacific silver fir, grand fir, noble fir, Shasta red fir, white fir, and alpine fir.

## 1936 — For All Ownerships

Species—	Western Oregon	Western Washington	Total
Western Hemlock	6,439,886	18,654,070	25,093,956
Sitka Spruce	1,145,377	1,625,924	2,771,301
Engelmann Spruce	46,643	9,259	55,902
White Fir	1,652,378	314,023	1,966,401
Amabilis Fir	763,712	6,567,606	7,331,318
Noble Fir	1,338,837	614,175	1,953,012
Alpine Fir	24,673	37,234	61,909
Mountain Hemlock	931,327	372,386	1,303,913
<b>Total</b>	<b>12,343,035</b>	<b>28,194,677</b>	<b>40,537,712</b>

Note—Other tables on this page for later years exclude government-owned reserves.

## INLAND EMPIRE PULPWOOD\* BY SPECIES AND SUBREGION

Data for Northeastern Washington were revised and brought up to date as of Jan. 1, 1949. Data for North Idaho and Western Montana were as of Jan. 1, 1945.

Subregion†	Engelmann Spruce	Hemlock	Balsam Firs	Cottonwood and Aspen	Total
<i>Million Cubic Feet</i>					
Northeastern Washington	65	124	139	18	346
North Idaho	608	386	1,697	10	2,701
Western Montana	828	54	242	53	1,177
<b>Total</b>	<b>1,468</b>	<b>481</b>	<b>1,992</b>	<b>67</b>	<b>4,008</b>

Source: Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Economics, Missoula, Mont.

\*The sound volume inside bark of trees larger than 5.0 inches d.b.h. from stump to 4- to 6-inch top diameter.

†Northeastern Washington consists of Ferry, Pend Oreille, Spokane and Stevens Counties; North Idaho is the portion north of the Salmon River; western Montana is the portion west of the Continental Divide.

Probably the most recent revision of pulpwood sources in the United States was that made for Northeastern Washington, as of Jan. 1, 1949, by the Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont., shown in chart in this section. The revisions have more than doubled the estimates of available pulpwood in that region according to estimates made four years previously. There has been talk of two new pulp mills in the Inland Empire region which that serves, and one seems a good prospect.

"We are working on a resurvey of North Idaho," M. B. Dickerman, chief of the Division of Forest Economics of the Missoula station, wrote to **PULP & PAPER** on March 15.

# a debarker throws a big stream

*What an appetite* for pressure . . . capacity. With ordinary pumps, efficiency can't last long. That's why BJ builds special pumps for brutal debarking jobs.

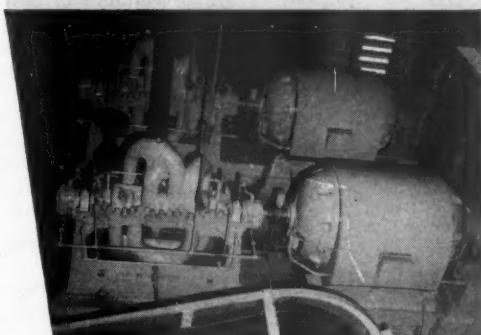


# BJ

## debarking pumps

**Multiplex** Barking any capacity at pressures to 1300 psi. These BJ Multistage Barking Pumps have horizontally-split case design with integrally-cast crossover passages. Opposed grouping of impellers equalizes end thrust. The BJ staggered volute design balances the high radial forces . . . eliminates objectionable shaft deflection found in other multistage pumps. BJ Multiplex Pumps operate continuously at maximum efficiency and are easy to assemble and to disassemble. Units in operation have set new standards of efficiency in hydraulic log barking.

**Double Case, Double Volute** Large capacities at pressures from 1000 to 2800 psi. This widely accepted BJ Pump is remarkably simple to disassemble. When internal inspection is needed, the outer barrel cover is unbolted and the dismantling tray attached. Inner case pulls out onto the tray. Upper half of the inner case is raised and the *completely assembled rotating element LIFTED* out. No need to disturb the main piping and the driver. The inner case, by its double volute design and staging arrangement, eliminates axial and radial thrusts as well as shaft deflection.



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BJ'S NAME IN PUMPING goes back seventy-odd years. And BJ engineers are long on experience in fitting BJ "Built-to-last" Pumps to your services. That's why operators receive the extra values of security and dependability when a BJ Pump supplies the water to their Debarker Nozzle. Get the benefit of BJ experience. Write today for the new 12-page, illustrated booklet on BJ Pumps for the Pulp and Paper Industry. Also covers the complete BJ line of efficient, general purpose pumps . . . like the BJ *Bilt-on*, *Type S*, and *Figure* Pumps. Ask for Bulletin 48-9000. No obligation, of course.

**Volume of Pulpwoods, Other Than Douglas Fir, in Western Washington and Western Oregon Available for Cutting, by County  
(In thousands of cubic feet)**

**WASHINGTON**

County—	1936	1944	1945	1946	1947
Clallam	3,732,187	2,741,000	2,672,000	2,641,000	2,610,000
Clark	34,248	33,000	32,000	32,000	29,000
Cowlitz	972,384	881,000	870,000	860,000	862,000
Grays Harbor	2,902,400	2,567,000	2,481,000	2,452,000	2,427,000
Island	8,934	9,000	9,000	9,000	9,000
Jefferson	3,456,382	2,237,000	2,215,000	2,204,000	2,207,000
King	2,166,924	2,051,000	2,131,000	2,109,000	2,100,000
Kitsap	23,295	19,000	19,000	18,000	19,000
Lewis	2,423,835	2,067,000	2,028,000	1,997,000	1,980,000
Mason	465,119	334,000	331,000	329,000	323,000
Pacific	1,908,220	1,832,000	1,753,000	1,727,000	1,684,000
Pierce	1,358,908	1,187,000	1,148,000	1,127,000	1,122,000
San Juan	11,461	11,000	11,000	11,000	12,000
Skagit	1,836,559	1,699,000	1,664,000	1,641,000	1,632,000
Skamania	1,825,243	1,831,000	1,845,000	1,837,000	1,846,000
Snohomish	2,266,424	2,176,000	2,159,000	2,148,000	2,139,000
Thurston	53,818	31,000	31,000	31,000	30,000
Wahkiakum	508,615	438,000	463,000	454,000	474,000
Whatcom	1,006,741	986,000	957,000	940,000	939,000
Total	26,961,697	23,130,000	22,819,000	22,567,000	22,444,000

**OREGON**

County—	1936	1944	1945	1946	1947
Benton	58,273	34,000	33,000	32,000	31,000
Clackamas	1,141,042	1,087,000	1,241,000	1,215,000	1,220,000
Clatsop	1,089,450	1,163,000	1,131,000	1,110,000	1,100,000
Columbia	48,139	36,000	37,000	36,000	36,000
Coos	434,653	310,000	389,000	387,000	392,000
Curry	185,953	187,000	192,000	192,000	193,000
Douglas	1,635,494	1,548,000	1,570,000	1,552,000	1,567,000
Hood River	424,900	292,000	340,000	340,000	338,000
Jackson	961,702	958,000	954,000	950,000	943,000
Josephine	110,289	107,000	107,000	107,000	105,000
Lane	2,812,664	1,330,000	1,286,000	1,282,000	1,272,000
Lincoln	666,705	471,000	438,000	421,000	417,000
Linn	1,465,262	1,417,000	1,251,000	1,225,000	1,214,000
Marion	528,369	505,000	505,000	461,000	463,000
Multnomah	227,155	30,000	132,000	133,000	132,000
Polk	220,277	163,000	156,000	154,000	142,000
Tillamook	984,874	761,000	732,000	709,000	725,000
Washington	84,693	42,000	41,000	40,000	41,000
Yamhill	22,774	21,000	20,000	20,000	19,000
Total	11,859,653	10,462,000	10,555,000	10,366,000	10,350,000

Source: Pacific Northwest Forest & Range Experiment Station. Includes all trees 4 inch and more in diameter, breast high.

After 1936 figures were adjusted for cutting depletion and growth and also for shifts of timber areas from reserved-for-cutting to available-for-cutting status. This accounts for the increase in Oregon in 1945 over 1944. The 1936 figures were published in the Review Number of this publication in 1936 and further explanation of those figures will be found in that issue.

sands of cubic feet of pulp woods—available for cutting and other than Douglas fir—in Western Washington and Western Oregon have been revised as of January 1, 1947, thanks to the cooperation of the Pacific Northwest Forest and Range Ex-

periment Station, U. S. Forest Service, Portland, Ore., based on forest surveys started in 1930. The results were first published in the Review Number of this journal in 1937, and revised in each Review Number since then. References may

be made to the 1938 issue for greater detail as to the forest study.

Timber on municipal watersheds, state parks, national parks, and primitive areas in national forests, which because of laws or declared public policy is not available for commercial use, was not included.

Since completing the survey the experiment station staff has brought the inventory of the forests of the majority of the counties in the region up to date through field examination.

To date the reinventory has been completed for the following 31 counties: Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, King, Kitsap, Lewis, Mason, Pacific, Pierce, Skagit, Snohomish, Thurston, Wahkiakum, and Whatcom counties, Washington; and Benton, Clackamas, Clatsop, Columbia, Coos, Jackson, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Washington and Yamhill counties, Oregon. It is planned to complete the reinventory of Douglas, Josephine, and Curry counties, Oregon, this year.

Volumes have been made current to Jan. 1, 1947, by adjusting the inventories of the above-named counties and the original inventories for the other counties for depletion through cutting and increment through growth.

The cubic foot volume estimates give the total sound wood content of the stem of the tree, exclusive of bark and limb wood. Decayed material is omitted, as well as the entire volume of all cull logs having more than two-thirds of the board foot content defective. No deduction was made for breakage in logging.

Approximately 45% is privately owned; 43% on national forest lands, such as county, state, Indian reservations, etc.

Not all of the timber shown in the tables will be available for pulp; considerable volumes of both western hemlock and Sitka spruce are utilized annually for lumber. In 1944 more than 600 hemlock logs and 300 million board feet of Sitka spruce logs, cut in the Douglas-fir region, were manufactured into lumber. However, it has been estimated that a total of nearly one-half million cords of slabs, edgings, and trimmings from sawmills is used for pulp annually.

**Mexico's Pine Resources**

State	Thousands of Acres	Thousands of Bd. Ft.
Lower California	25.7	65,190
Coahuila	206.1	792,517
Chiapas	34.6	140,338
Chihuahua	1,238.7	2,879,574
Federal District	9.9	19,281
Durango	1,380.5	4,860,336
Guanajuato	17.3	37,786
Guerrero	22.2	205,633
Hidalgo	35.3	150,543
Jalisco	183.8	295,719
Mexico	232.0	1,008,170
Michoacan	400.8	1,799,000
Morelos	9.1	5,085
Nayarit	43.2	25,926
Nuevo Leon	172.5	530,416
Oaxaca	74.9	141,785
Puebla	100.8	362,568
San Luis Potosi	65.5	142,033
Sinaloa	31.1	212,625
Sonora	62.8	169,220
Tamaulipas	202.6	269,940
Tlaxcala	15.1	33,089
Veracruz	260.4	969,440
Zacatecas	44.0	14,867

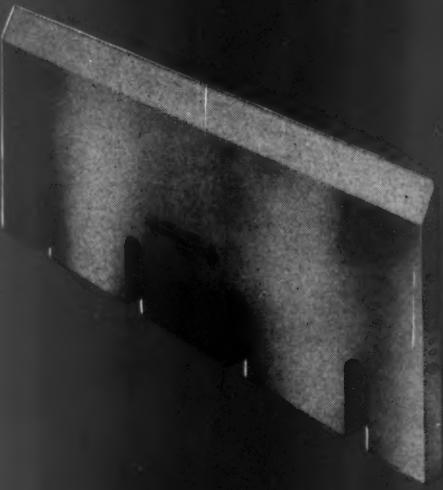
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## Heppenstall E.I.S. CHIPPER KNIVES



Mills throughout the country are standardizing on Heppenstall Chipper Knives because these knives continually produce more clean cut, easily-digested chips. Mill men know that with Heppenstall Knives in their chippers, they get fewer oversized or bruised chips... high costs of re-chipping and processing are reduced... and sawdust waste is held to a minimum.

Made from our own Electric Induction Steels, every Heppenstall Knife is heat treated and precision finished to give you maximum service. Initial costs

are low due to our *standardization of chipper knife slot dimensions*. Knife grinding expense is lower, because each knife retains its keen edge longer... operates more hours between grinds... produces a greater volume of uniform chips per grind.

Why not order your Heppenstall Chipper Knives today? We feel safe in suggesting that under your own operating conditions our knives will deliver a greater quantity of better quality chips—at a lower unit cost than any other knife!

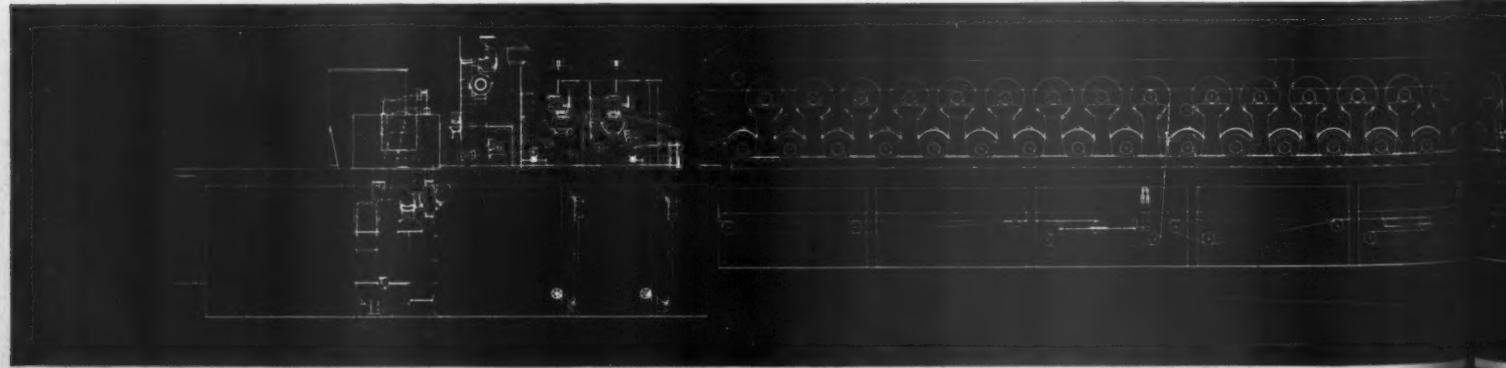


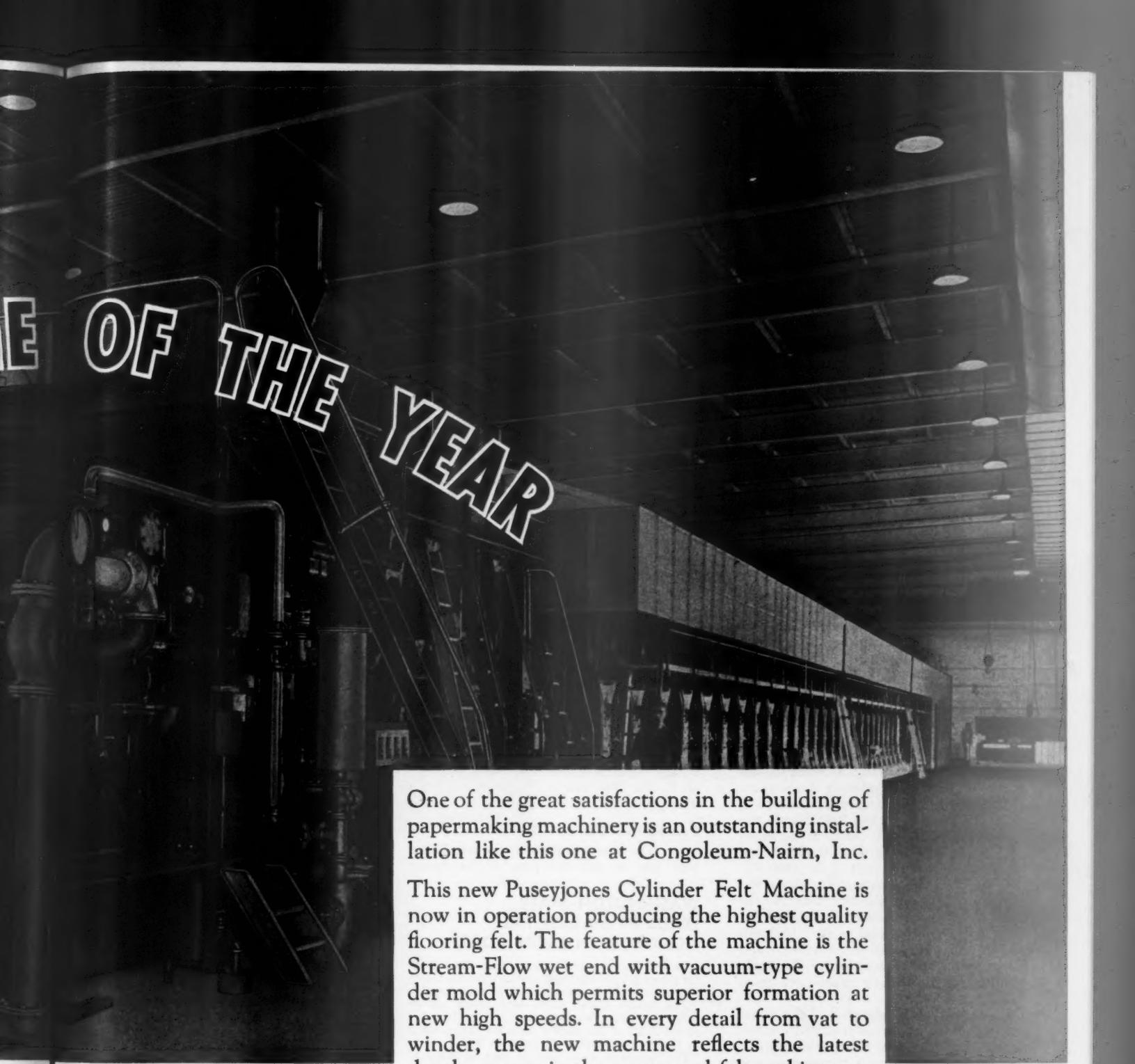
**HEPPENSTALL COMPANY**  
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168" Puseyjones Single Cylinder High Speed Felt Machine in Cedarhurst, Maryland, mill of Congoleum-Nairn, Inc. Designed and built for the manufacture of highest quality Flooring Felt.

Line drawing of new machine. Features include latest type Stream-Flow Vat System with Vacuum Cylinder Mold, Flow Spreader and Up-Flow Head Box; Press Part of pneumatically operated Simplex design, including suction primary press, main plain first press and forward suction second press; Dry Part arranged in four drive sections with sixty-seven 60" diameter dryers mounted in anti-friction bearings, with enclosed gearing, and rope carrier system for threading the sheet; latest type Steam Joints with dual revolving siphons; One 3-roll Calender Stack with heavy duty anti-friction bearings; Pope-Type Reel; Unwinder with pneumatically operated brake; 2-Drum Winder with hydraulic unloading table; all rotating parts dynamically balanced for top driving speeds. Multiple-generator type sectional electric drive.





**E OF THE YEAR**

One of the great satisfactions in the building of papermaking machinery is an outstanding installation like this one at Congoleum-Nairn, Inc.

This new Puseyjones Cylinder Felt Machine is now in operation producing the highest quality flooring felt. The feature of the machine is the Stream-Flow wet end with vacuum-type cylinder mold which permits superior formation at new high speeds. In every detail from vat to winder, the new machine reflects the latest developments in the paper and felt making art.

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**'49 WILL  
BE GOOD  
YEAR**

# 6-yr. Shortage Over

A six-year pulp shortage has ended as far as the North American continent is concerned. It was brought to an end in the closing months of 1948. But, despite a great many uncertainties about the pulp markets both on this continent and abroad in the spring of this year, 1949 was certain to be another good year for the pulp industry.

Even though consumption of pulp in U. S. paper, rayon and other mills declines this year, it will certainly not be far off the all-time record of 14,961,505 tons consumed in 1948, according to latest figures of the U. S. Pulp Producers Association. That was 8% above the previous record in 1947. But throughout the 1940 decade the consumption of pulp in the U. S. has averaged more than twice what it did during the '20s and through half of the 1930 decade. It has been substantially above the consumption during the late '30's. No responsible observers expect any drastic decline, but when this year is over 1948 will still be the peak year of production and consumption and it may be in the early or mid-1950s before any records are again made.

The unpredictable demand of the rayon and cellophane and plastics industries; the unpredictable possible new paper applications — these can have a tremendous and surprising influence.

"Pulp and related industries are natural 'growth' industries," comments Fred G. Stevenot, president of Puget Sound Pulp & Timber Co., and he looks forward this year — "The pulp industry is growing faster than population or industry as a whole, due to new uses found and new applications for the product."

In the world market for pulp there may

be important changes. The International Financial News Summary of the International Monetary Fund stated in March of 1949 that a plan was being considered in Sweden to introduce a special dollar exchange rate. Depreciated Swedish currency was again threatening to become a factor as it had in the late '30's. Even though most other records were being broken, it is noteworthy that the record-breaking pulp imports by the U. S. in 1937 of 2,394,765 tons were not equalled even in the biggest post-war year of imports, in 1947 when 2,329,802 tons came into the U. S. and 1948 saw a decline to 2,177,172 tons imports.

#### **Depreciated Currency Threat**

The heavy imports in the late 1930's was due to the dumping of European

#### **WASHINGTON STATE LEADS IN MARKET PULP —ONE-FOURTH FROM COAST**

United States mills which purchase their pulp for paper output are dependent on Pacific Coast states for more than one-fourth of their supply.

The Pacific Coast states—and nearly all of this came from Washington State mills—produced 25.2% of the market pulp for the country in 1948 as compared with 22.6% in 1947.

The Southern states ranked next as regional supplier of market pulp, but it was far behind, producing only 7.2% of this pulp. But 57% was imported from outside of the U. S.—mainly from Canada and Scandinavia. A table in this section shows tonnages and

Nearly all the market pulp from the Pacific Coast was high quality sulfite for fine paper, rayon, etc. There are nine so-called market pulp mills in the State of Washington alone—including the two largest sulfite mills in the world. This represents far more tonnage for market pulp than in any similar area on the globe.

pulps in these markets and depreciation of currency. In those years this magazine took a leading role in bringing to the attention of government officials and leaders in Congress the grave threat to the domestic industry. That dumping of pulp was a most serious matter was shown by the very grave fact that U. S. mills operated at only 35% of capacity for a period of a year and a half up to early 1939. In '36 and '37, over 2 1/4 over two million tons were imported annually, '38 was close to two million and '39 was well over it again.

Gratifying evidence that the energetic campaign **PULP & PAPER** waged in those years for protection of a North American pulp industry—an industry which in many regions was just in its infancy—was in the best interests of most of the nations of the world did not appear until after 1941. During World War II, the important need of pulp for firing guns and for many other essential war uses, when it was impossible to import any pulp through submarine blockades, demonstrated the need for a healthy North American pulp and paper industry. It was fortunate that this industry survived the pulp price war of the '30's. It's sure our good health is no less urgent today in the interest of military defense, not to mention the protection of jobs for many thousands of pulp mill employees.

In these recent years, it was Canada which supplied the greater part of pulp imports by the U. S. As Canadian imports have increased, Scandinavian imports have decreased. Expansion in Canada may be slowing down, especially in view of restrictions imposed by the government

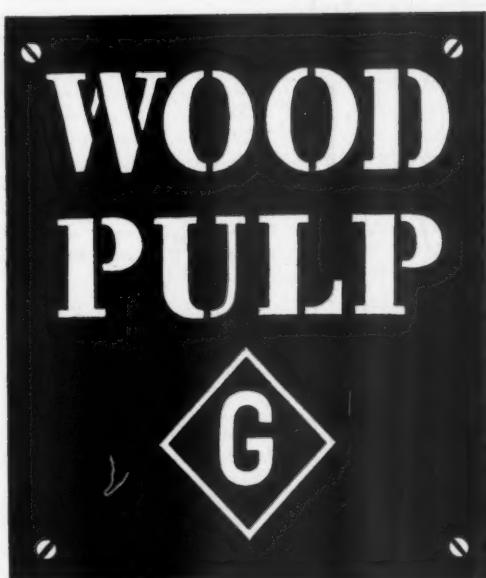
#### **REGIONAL ORIGIN OF SALES OF DOMESTIC MARKET PULP IN U. S.**

(All Grades Except Defibrated—in Tons of 2,000 lbs.)

Also showing % of all new supply, imported and domestic

Year	Pacific	New South England	Lake	Mid-Atlantic	Total U.S.	Mkt. Pulp Imports	New Supply
1947 (Tons) .....	727,135	227,770	218,451	96,705	69,732	1,339,793	1,883,157
1947 (% of New Supply) .....	22.6	7.0	6.7	3.0	2.1	41.57	58.43
1948 (Tons) .....	801,842	230,744	188,527	95,559	60,920	1,377,592	1,739,120
1948 (% of New Supply) .....	25.2	7.2	5.84	2.96	1.08	42.28	57.72

*Established 1886*



"O, what men dare do!  
What men may do!  
What men daily do!"

SHAKESPEARE

It has been our privilege to see progress and achievement that have been nothing short of amazing in Pulp and Paper, decade by decade for sixty-three years.

Impressive as the industry's past has been, vast untapped potentialities remain to be realized. Men are thinking, planning, building—to develop new products and new uses for a world that never stops wanting.

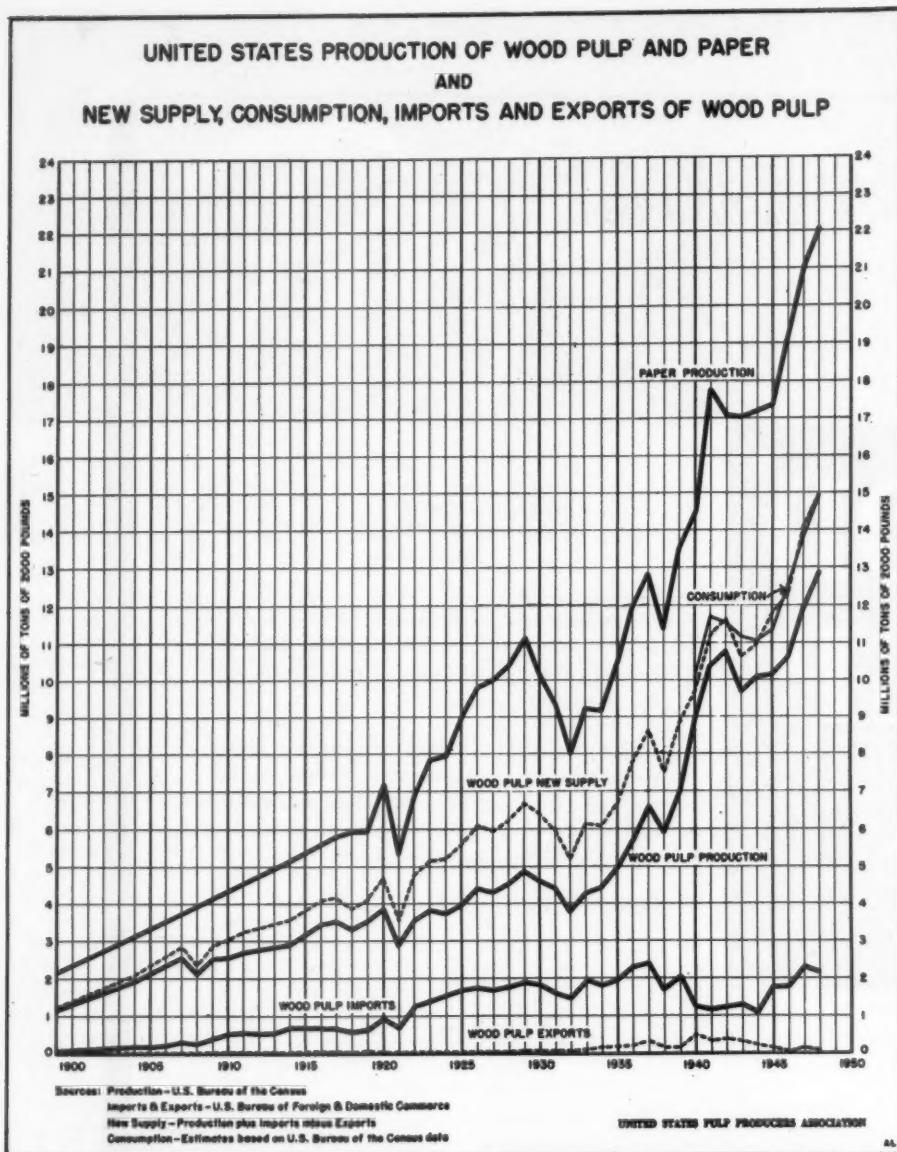
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#### U. S. WOOD PULP EXPORTS QUANTITY AND VALUE

	Tons	Value
1948	93,782	13,224,370
1947	130,096	18,866,564
1946	39,361	3,645,963
1945	135,997	9,735,738
1944	218,401	15,518,264
1943	300,700	20,288,879
1942	378,148	24,030,443
1941	328,608	21,292,880
1940	480,938	29,736,737
1939	139,504	6,493,140
1938	140,484	9,986,826
1937	322,544	20,546,319
1936	193,485	10,600,176
1935	171,710	8,632,971
1934	142,931	7,005,559
1933	79,191	3,113,883
1932	47,860	2,037,553
1931	53,307	2,405,642
1930	48,426	2,070,553

Source: U. S. Department of Commerce and U. S. Pulp Producers Assn.

in Quebec and elsewhere. However, nearly doubling of production in British Columbia to 1,000,000 tons a year is predicted by that province's minister of lands and forests.

No expansion is expected in Sweden. A factor which may be disconcerting to the Swedish exporters is the evident interest of North American pulp producers in the European market. A great deal of pulp demand is expected to be built up by European recovery and restoration of many idle mills abroad. This spring, representatives of several pulp companies flew to Germany because of interest in pulp buying in Bizonia.

#### U. S. PULP IMPORTS FROM EUROPE SINCE POST-WAR SHIPPING RESUMED

	Sweden	Finland	Norway	Other	Total
June-Dec.					
1945	672,261	0	0	672,261	
1946	445,124	115,220	0	560,344	
1947	555,215	223,973	9,577	4,928	793,693
1948	384,583	175,900	13,218	1,696	575,397
1st 2 Mos.				(Czech)	
1949	35,122	7,743	1,298	4	44,167

#### U. S. CHEMICAL PULP IMPORTS SINCE 1922 AND DECLARED VALUE

	Tons	Value
1948	1,882,140	\$253,785,415
1947	2,016,153	238,126,318
1946	1,549,342	124,210,220
1945	1,526,647	106,858,690
1944	889,951	65,456,207
1943	1,063,134	69,369,678
1942	1,010,136	64,912,725
1941	953,458	60,343,261
1940	1,053,057	55,474,094
1939	1,798,673	70,680,322
1938	1,551,254	69,171,748
1937	2,176,183	93,926,745
1936	2,049,722	78,785,004
1935	1,743,208	67,457,462
1934	1,616,598	58,580,037
1933	1,731,370	54,157,662
1932	1,293,295	43,634,789
1931	1,385,857	56,392,579
1930	1,530,985	73,962,977
1929	1,607,267	82,326,081
1928	1,505,764	78,021,093
1927	1,430,169	79,880,481
1926	1,427,654	82,952,520
1925	1,332,522	73,317,337

Source: U. S. Pulp Producers Assn. and U. S. Dept. of Commerce.

Capacity of U. S. pulp mills has increased to over 14,000,000 tons, a 10% increase in a year. Production reached a record of 12,872,292 tons, 8% above 1947. The peak month of all time in production was October—after that there has been a falling off of domestic pulp production. This was especially noted in the Southern Kraft field early this year.

In any analysis of the pulp situation, care must be taken to differentiate between unbleached kraft and the so-called white pulps—sulfite and bleached and semi-bleached krafts. Very little unbleached kraft has been sold under contract in U. S. and Canada. This grade of foreign pulp has not been selling and the Southern U. S. product has followed an erratic course.

Another important point to observe is that as less European pulp has sold in this country, North American contract prices have remained comparatively steady and substantially below the European prices. According to combined judgment of several experts interviewed by this magazine, only 24% of the new supply of pulp sold in the U. S. during 1948 was sold at prices higher than U. S. and Canadian contract prices.

#### Canada and Mexico Set Records

Canada's pulp production rose to new record levels in 1948 of 7,348,524 tons as compared with the previous high of 7,009,998 tons in 1947. It has now reached a rate of production nearly twice the best pre-war years. In the past two years it was more than twice what it was in 1930 and almost five times what it was in 1921.

In Mexico, where **PULP & PAPER** extended its survey over a year ago, a growing pulp and paper industry was demanding more home-produced pulp, especially kraft. It is estimated that Mexico produced over 70,000 tons of pulp in 1948

(Cont. on page 106; statistics on 103-4)

### FIBROUS MATERIALS CONSUMED IN PULP & PAPER MANUFACTURE IN U. S.

	Woodpulp	Waste paper	Straw	Rags	Flax	Cotton	Manila Stock	Misc. Fibers
1947	13,285,435	8,009,052	520,706	462,388	65,940	24,970	10,071	408,963
1948	14,374,586	7,584,501	523,611	415,668	60,969	15,932	13,426	422,106

### TOTAL UNITED STATES PRODUCTION OF WOOD PULP

By Grades—1925-1948

(Tons of 2,000 pounds)

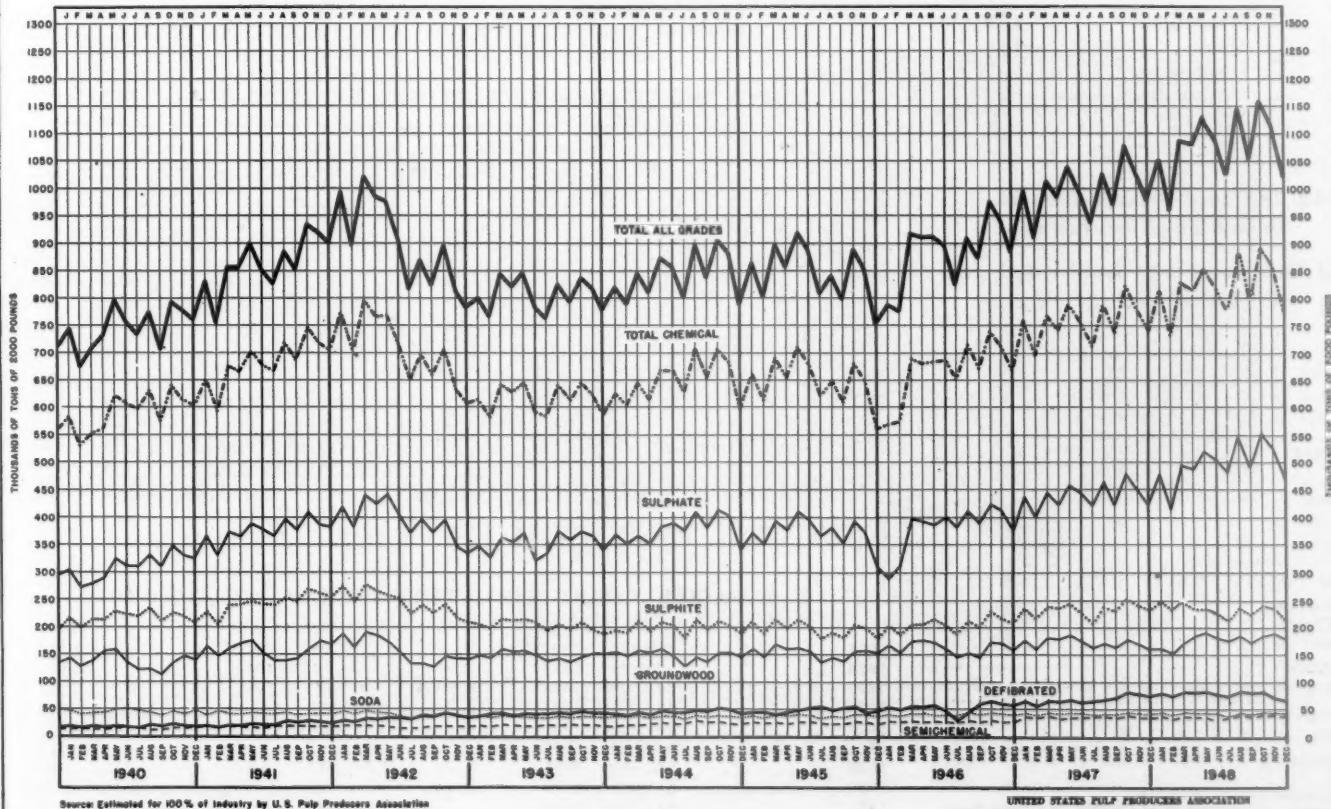
Year	Total	Unbleached Sulfite	Bleached Sulfite	Total Sulfate	Groundwood	Soda	All Other
1925	3,962,217	790,510	612,576	409,768	1,612,019	472,647	64,697
1926	4,394,766	911,729	646,446	519,960	1,764,248	496,920	55,463
1927	4,313,403	872,411	680,288	603,253	1,610,409	487,478	59,564
1928	4,510,800	836,751	722,107	774,225	1,610,988	488,641	78,088
1929	4,862,885	848,754	839,953	910,888	1,637,653	520,729	104,908
1930	4,630,308	815,897	751,166	949,513	1,560,221	474,230	79,281
1931	4,409,344	676,711	740,812	1,033,439	1,449,240	374,054	135,088
1932	3,760,267	548,702	596,937	1,028,846	1,203,044	290,630	92,108
1933	4,276,204	601,102	726,473	1,259,351	1,197,553	388,206	103,519
1934	4,436,128	631,763	814,281	1,246,269	1,296,535	354,462	92,818
1935	4,925,669	634,947	944,620	1,467,749	1,355,819	417,724	104,810
1936	5,695,219	693,903	1,127,939	1,794,734	1,475,620	478,502	124,521
1937	6,572,918	791,575	1,348,669	2,139,087	1,600,667	507,548	185,372
1938	5,933,560	601,855	1,004,621	2,443,051	1,333,308	395,307	155,418
1939	6,993,334	729,203	1,217,249	2,962,657	1,444,875	441,565	197,785
1940	8,959,559	995,700	1,612,089	3,747,992	1,632,727	532,387	438,664
1941	10,375,422	1,215,649	1,703,131	4,526,611	1,885,808	479,935	564,288
1942	10,783,430	1,213,066	1,717,206	4,738,266	1,869,862	462,065	782,965
1943	9,680,462	883,306	1,553,196	4,235,724	1,766,752	418,868	822,616
1944	10,108,443	862,928	1,523,221	4,548,810	1,769,287	412,755	991,442
1945	10,167,200	815,969	1,543,762	4,471,875	1,826,750	429,757	1,079,087
1946	10,606,527	784,391	1,692,077	4,588,016	1,951,456	476,211	1,114,376
1947	11,945,864	894,017	1,901,945	5,356,710	2,049,814	491,580	1,251,798
1948	12,872,292	901,814	1,909,402	6,013,696	2,175,107	509,864	1,362,409

Source: U. S. Bureau of the Census.

Note: Through 1939, "exploded" wood pulp is included in Groundwood and thereafter in "All Other."

1933 through 1936 data on Soda are estimated from United States Bureau of the Census combined data for Soda and Semichemical pulp.

### UNITED STATES WOOD PULP PRODUCTION



## WOOD PULP PRODUCTION BY STATES



The last year (1946) in which figures were issued showed these leaders:

	Tons
1st..... Washington .....	1,332,940
2nd..... Maine .....	1,185,232
3rd..... Louisiana .....	989,388
4th..... No. and So. Carolina..	923,926
5th..... Wisconsin .....	889,139
6th..... Florida .....	694,594

### 1948 Regional Percentages of U.S. Wood Pulp Production

#### (All Grades except Defibrated and Exploded Wood Pulp)

	New Eng.	Mid. Atlantic	Lake	Pac.	South
Sulfite .....	19%	11 1/4%	23 1/2%	*46%	
Blch. 18	10	26	*46		
Unbl. 22	15	19	44	0	
Sulfate .....	3	5	8	84	
Blch. 8	8	5	8	79	
Semi-bl. 0	0	19	16	65	
Unbl. 2	2	5	8	85	
Soda .. 29 1/2	33 1/2	11	26		
Semichem & Chemifibre .. 0	0	13	87		
Ground-wood .. 28	15	20	16 1/2	20%	
Screenings .. 23	23	26	18	28	
TOTAL 12%	8%	13%	17%	50%	

\*Includes one Southern Mill.  
Source: As reported to U. S. Pulp Producers Association by 98% of the Industry and estimated for 2%.

**BREAKDOWN OF PULP PRODUCTION BY STATES**, according to latest available U. S. Census figures. For the past couple of years these have not been gathered by that bureau, but according to best information available, WASHINGTON and MAINE, the two states shown in black, are still the leaders.

### U. S. WOOD PULP PRODUCTION BY REGIONS — 1948

(All Grades Except Defibrated and Exploded Wood Pulp)  
(In Tons of 2,000 Pounds, Air Dry Weight)

	New Eng.	Mid.Atl.	Lake	Pacific	South	Total
Sulfite .....	538,206	321,518	659,735	1,277,232*	2,796,691	
Bleached .....	341,441	185,840	490,416	887,207*	1,904,904	
Unbleached .....	196,765	135,678	169,319	390,025	0	891,787
Sulfate .....	178,012		313,152	497,529	5,036,529	6,025,222
Bleached .....	84,227		49,449	82,959	822,053	1,038,688
Semibleached .....	0	0	43,769	36,872	148,700	229,341
Unbleached .....	93,785		219,934	377,698	4,065,776	4,757,193
Soda .....	149,503	170,029	54,669	134,243	508,444	
Semichemical/Chemfibre .....	0	0	60,616	417,245	477,861	
Groundwood .....	618,000	328,336	424,827	358,944	445,000	2,175,107
Screenings & Off-Quality .....	37,267		34,910	24,573	37,116	133,866
<b>TOTAL</b> .....	<b>1,417,618</b>	<b>923,253</b>	<b>1,547,909</b>	<b>2,116,238</b>	<b>6,112,173</b>	<b>12,117,191</b>

\*Includes one Southern Mill in Pacific Coast Sulfite total.

Source: As reported to U. S. Pulp Producers Association by 98% of industry and estimated for 2%.

### U. S. PACIFIC COAST WOOD PULP PRODUCTION, 1926-1948

	Tons of 2,000 lbs. (except defibrated pulp)	1923	1924	1925	1926	1927	1928	1929	1930	1931
	299,596	1932								
	309,433	1933								
	322,594	1934								
	378,005	1935								
	449,218	1936								
	562,514	1937								
	780,494	1938								
	815,089	1939								
	817,548	1940								
		607,662	1941							
		773,102	1942							
		935,033	1943							
		1,011,421	1944							
		1,198,431	1945							
		1,523,192	1946							
		1,087,747	1947							
		1,384,147	1948							
		1,839,263								

—Source: U. S. Pulp Producers Assn.

# THICKENING by the Cheney Bigelow Air Discharge method is increasing tonnage and lowering costs for mills handling unbleached sulphite and waste paper stock. Here's why:

- *Capacity is increased* — sometimes doubled — because there is no couch. Air pressure removes the stock from the cylinder face, consequently it is not necessary to form a sheet that will stick to the couch before it can be discharged.
- *Consistency is controlled closely*. Stock is piped without the additional operation of adding water.
- *Cleanliness is increased*. Air pressure keeps the wire face clean. The new Cheney Bigelow rubber seal is easily loosened for simple hosing out.
- *Operation is economical*. There is less down time due to couch repairs and wire or seal changes. Operation is with one cover.
- *Installation is simple*. The unit does not require a vacuum leg, so installation can be made at any level.

The new Cheney Bigelow Air Discharge Thickener handles stock from  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  of 1% and thickens to a desired and *controlled* consistency of from 2% to 5% or better. Just look at these five important advantages that add up to increased capacity and lower costs for many mills.

1  
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Complete reports on Cheney Bigelow Air Discharge thickening of Unbleached Sulphite, Waste Paper Stock, and Groundwood are available. Write for your free copies. Cheney Bigelow Wire Works, Springfield 7, Massachusetts.



## Cheney Bigelow

SPRINGFIELD • MASSACHUSETTS

### U. S. IMPORTS OF WOOD PULP BY COUNTRIES AND GRADES

(In tons of 2000 pounds, air dry weight)

	All Countries	Canada & Newfoundland	Mexico	Sweden	Finland	Norway	Russia
All Grades Wood Pulp:							
1945	1,754,065	1,081,840	-----	672,261	-----	-----	-----
1946	1,805,418	1,245,084	-----	445,114	115,220	-----	-----
1947	2,329,802	1,528,767	7,342	555,215	223,973	9,577	4,928
1948	2,177,172	1,600,721	1,054	384,583	175,900	13,218	-----
Rayon & Special Grades of Bleached Sulfite:							
1945	146,032	142,399	-----	3,633	-----	-----	-----
1946	202,192	189,775	-----	10,978	1,439	-----	-----
1947	248,606	224,882	-----	21,274	780	1,670	-----
1948	239,842	224,942	-----	9,080	3,718	2,102	-----
Paper Grades of Bleached Sulfite:							
1945	242,424	190,187	-----	52,237	-----	-----	-----
1946	222,653	195,112	-----	17,193	10,348	-----	-----
1947	288,559	229,771	-----	26,654	27,156	4,978	-----
1948	317,197	247,838	-----	37,827	20,663	10,669	-----
Unbleached Sulfite:							
1945	657,297	370,151	2,128	285,018	-----	-----	-----
1946	618,571	410,843	669	172,181	34,878	-----	-----
1947	731,648	430,793	7,759	225,380	62,788	-----	4,928
1948	676,484	447,443	6,231	155,086	66,228	-----	-----
Bleached Sulfate:							
1945	71,996	44,760	-----	27,236	-----	-----	-----
1946	79,697	56,213	-----	23,484	-----	-----	-----
1947	239,069	174,966	-----	64,103	-----	-----	-----
1948	277,989	212,022	-----	65,967	-----	-----	-----
Unbleached Sulfate:							
1945	380,432	104,107	72	276,253	-----	-----	-----
1946	397,906	137,472	-----	206,859	53,575	-----	-----
1947	477,516	145,626	-----	205,366	118,953	229	-----
1948	337,510	149,787	-----	114,065	72,493	111	-----
Groundwood:							
1945	222,710	194,275	590	27,845	-----	-----	-----
1946	250,175	220,576	200	14,419	14,980	-----	-----
1947	308,946	279,512	-----	12,438	14,296	2,700	-----
1948	290,479	273,881	906	2,558	12,798	336	-----
Soda:							
1945	21,157	21,118	-----	39	-----	-----	-----
1946	19,740	19,740	-----	-----	-----	-----	-----
1947	21,203	21,203	-----	-----	-----	-----	-----
1948	24,843	24,843	-----	-----	-----	-----	-----

Screenings: Imports totaled 12,828 tons in 1948; 14,255 in 1947; 14,484 in 1946; and 12,017 tons in 1945, all from Canada.  
Source: U. S. Department of Commerce and U. S. Pulp Producers Association.

### U. S. WOOD PULP IMPORTS — From Europe and North America by Grades

(In Short Tons)

Total from Europe:	Bleached Sulfite Paper Grades	Non-Paper Grades	Unbleached Sulfite	Bleached Sulfate	Unbleached Sulfate	Ground-wood	Soda	Total
June-December, 1945.....	52,237	3,633	285,018	27,236	276,253	27,845	39	672,261
1946.....	27,541	12,417	207,059	23,484	260,434	29,409	0	560,344
1947.....	58,788	23,724	293,095	64,103	324,548	29,434	0	793,693
1948.....	69,359	14,900	221,538	65,967	186,669	15,692	0	574,125
 Total from Canada, Newfoundland, Labrador, Mexico:	 Bleached Paper Grades	 Non-Paper Grades	 Unbleached Sulfite	 Bleached Sulfate	 Unbleached Sulfate	 Ground-wood	 Soda	 Total
1945.....	190,187	142,399	372,279	44,760	104,179	194,865	21,118	1,061,804
1946.....	195,112	189,775	411,512	56,213	137,472	220,776	19,740	1,245,084
1947.....	229,771	224,882	438,447	176,875	153,010	279,512	21,203	1,537,955
1948.....	247,838	228,840	449,735	212,022	150,841	274,787	24,843	1,601,734

Source: Department of Commerce.

as compared with only 18,600 tons in 1937 and 57,000 tons in 1947.

Imports of Mexican pulp in the U. S. reached a high of 7,342 tons in 1947 as the next market kraft mill, the first in the country, at Atenquique came into production. But the policy of the Mexican government is to build up its own paper industries, and most of that pulp was con-

verted in Mexican mills in 1948 and exports to the U. S. fell off to 1,054 tons.

Reviewing 1948's pulp developments in the U. S., the Department of Commerce Review praised the domestic industry's ability to reach a new record despite floods, droughts and a boom men's strike in the Pacific Northwest logging industry. Said the government publication:

"The substantial increase in domestic output proved a welcome development in view of the year's substantial decline in imports of overseas pulp, the outcome of a rebellion of domestic pulp-purchasing mills against the high prices of northern European suppliers.

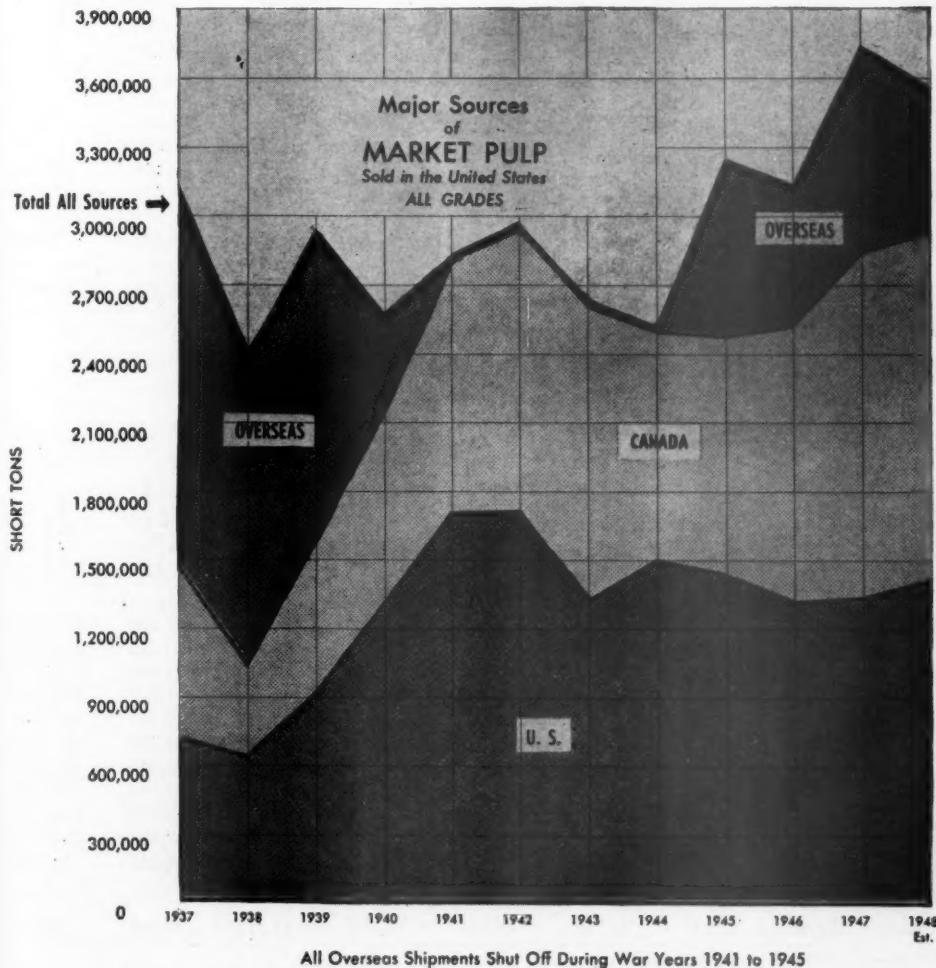
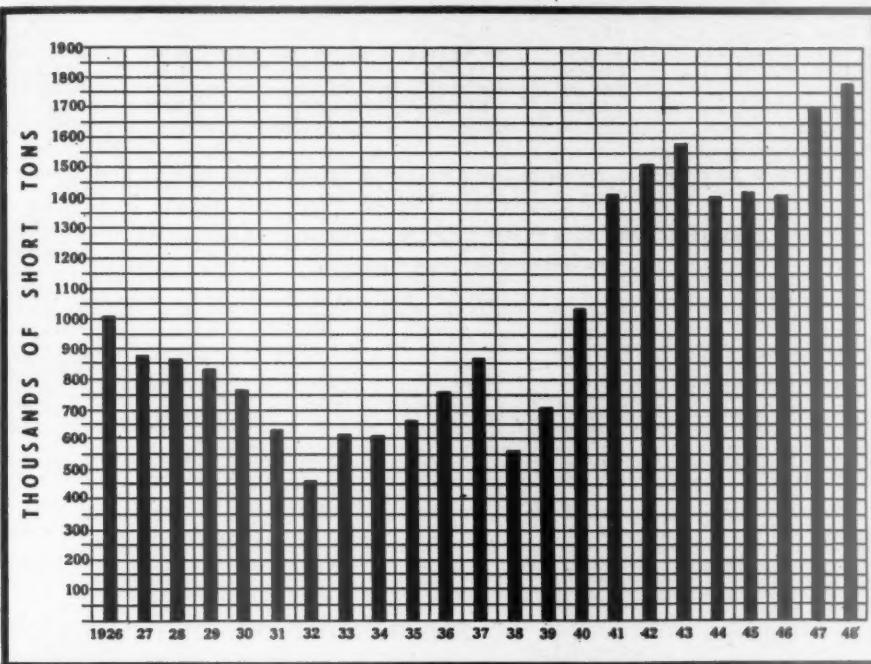
"Wood pulp in 1948 comprised 61% of all fibrous materials used in paper and

**CANADA'S PULP EXPORTS SINCE 1921  
AND ESTIMATED VALUE**

Year	Tons	Value
1948	1,796,998	\$211,564,384
1947	1,698,712	177,802,612
1946	1,418,558	114,020,659
1945	1,434,523	106,054,917
1944	1,408,075	101,563,024
1943	1,556,727	100,015,094
1942	1,510,727	95,266,873
1941	1,411,720	85,897,736
1940	1,068,490	60,930,149
1939	705,515	31,000,602
1938	554,034	27,730,738
1937	870,711	41,815,731
1936	754,489	31,246,695
1935	662,468	27,625,730
1934	605,635	25,444,844
1933	608,509	23,354,637
1932	452,292	18,930,065
1931	622,531	30,056,643
1930	760,172	39,059,979
1929	835,709	43,577,021
1928	863,806	45,614,323
1927	879,155	46,996,011
1926	1,003,081	52,077,122
1925	959,671	47,931,905
1924	781,978	40,242,972
1923	875,358	37,027,496
1922	818,246	41,037,849
1921	527,222	33,133,675

Source: Canadian Dominion Bureau of Statistics.  
Last year estimated by Daily Mill Stock Reporter.

# Pulp Exports from Canada



board manufacture against 58% in 1947. The gain in pulp consumption over that of the so-called waste fibers was due in large measure to several factors, among which were the renewed emphasis on higher quality papers—stimulated by revived industry competition—and the trend toward the production of boards employing greater proportions of pulp.

"Following a year in which the pulp industry consistently operated at unwanted levels, 1948 began in an atmosphere of optimism with the paper and board raw material outlook generally favorable in respect to both the domestic and imported pulp supply. The only significant problem in that field was the curtailment of pulpwood imports from the Canadian province of Ontario into border pulp producing states, a policy that contributed to a decline of around 12% in Lake States imports of Canadian pulpwood during the year just past.

"After a moderate levelling off in pulp output at the 1947-48 winter's end, due to the cumulative effects of severe weather, over-all production resumed its near-capacity speed in the early spring, a trend that reached its height in October when a monthly record for pulp production—as well as consumption—was established. During 1948, new monthly highs in pulp output and in consumption were established in four separate months—March, May, August, and, lastly, in October.

Obstacles which were surmounted by the pulp industry in 1948, for the most part, were regional in character. Restriction of pulpwood imports prompted mills in the Lake States to appraise other areas—even as far as the Rocky Mountains—for their future requirements. The Pacific Northwest suffered temporary interruptions from the boommens' strike of May

**CANADIAN WOODPULP PRODUCTION BY PROVINCES**  
(Quantity in Tons—Value in Dollars)

Years	Quebec	Ontario	British Columbia	Other Provinces	TOTAL
1945 Tons	2,887,176	1,468,682	520,571	724,385	5,600,841
1945 Value	\$114,197,036	\$62,596,260	\$21,998,381	\$33,081,445	\$231,873,122
1946 Tons	3,460,853	1,834,975	520,779	795,803	6,612,410
1946 Value	\$140,930,891	\$84,049,038	\$24,216,820	\$38,427,478	\$287,624,227
1947 Tons*	3,751,579	2,100,237	593,165	808,690	7,253,671
1947 Value*	\$194,805,327	\$122,382,058	\$37,720,328	\$48,945,522	\$403,853,235

\*Latest figures available.

(Statistics on U. S. Production of Pulp by States will not be available until later this year, according to U. S. Dept. of Commerce.)

**SWEDEN'S WOOD PULP EXPORTS TO ALL COUNTRIES**

As Compared with Exports to the U. S.  
(in short tons)

Years—	Bleached Sulfite	Unbleached Sulfite	Bleached Sulfate	Unbleached Sulfate	Ground-wood
1938 (To All Countries).....	304,078	571,077	92,793	575,508	297,420
1944 (To All Countries).....	156,340	710,709	13,088	70,889	10,600
1945 (To All Countries).....	262,146	49,787	43,273	536,144	314,054
1945 (To U. S.).....	56,496	283,959	28,070	274,429	27,933
1946 (To All Countries).....	397,120	572,831	69,938	499,656	264,704
1946 (To U. S.).....	23,315	151,261	22,772	168,704	8,777
1947 (To All Countries).....	445,607	530,569	136,701	462,120	223,852
1947 (To U. S.).....	40,076	218,918	56,282	201,440	12,532
1948 (To All Countries).....	449,994	454,465	160,365	403,108	215,432
1948 (To U. S.).....	37,827	155,086	65,967	114,065	2,558

and the severe flood in the Columbia River basin during June. In the latter part of the year, a power shortage resulting from the extended drought temporarily slackened pulp manufacture in several mills of the Great Lakes area as well as some groundwood plants in New England. The foregoing factors had the effect of holding production in the northeast and northwest regions well below the over-all rate. In the northwest, reduction in the operating schedules of two important mills in December was the first reported from that area since the war's end. The close of the year, however, saw pulp output for the country as a whole proceeding at a generally high level.

"With regard to market pulp, the mills purchasing the bulk of their requirements found it difficult during the first few months of 1948 to secure adequate supplies of wood pulp at a cost that permitted them to operate on a competitive basis. The prices of northern European pulp were so disproportionately high that many of the non-integrated mills, as early as March, began to limit their weekly production and to restrict their pulp con-

(Cont. on page 112; statistics on 110)

**FINLAND'S EXPORTS OF CHEMICAL PULP**  
(in short tons, dry weight)

	—1948—		—1947—		—1946—		—1945—		—1944—	
	Sulfite Tons	Sulfate Tons								
Soviet Union .....	21,097	16,910	11,496	12,236	39,322	46,456	106,050	67,365	6,735	7,986
Britain .....	140,322	146,967	111,412	91,198	80,306	76,275	39,358	19,531	.....	.....
U. S. A. ....	75,254	57,666	88,664	107,085	41,102	44,926	4,980	5,891	.....	.....
France .....	40,944	29,878	15,599	9,124	8,776	613	.....	.....	3,423	1,872
Holland .....	.....	.....	.....	.....	.....	.....	.....	.....	1,070	774
Germany .....	.....	.....	.....	.....	.....	.....	.....	.....	62,468	40,699
Denmark .....	18,260	10,297	16,189	8,280	14,519	4,753	7,320	9,749	18,624	13,613
So. America .....	14,557	5,035	9,881	3,622	5,555	1,014	753	.....	.....	.....
Other .....	60,990	64,260	38,084	45,948	12,987	6,930	1,239	1,922	7,752	3,891
Total .....	371,424	331,013	291,325	277,493	202,567	180,967	159,700	104,458	100,072	68,835

Source: Finnish Paper & Timber Journal.

**PROPORTION OF UNITED STATES MARKET FOR PULP SUPPLIED BY AMERICAN PULP MILLS AND FOREIGN PULP MILLS—1939-1945-1946-1947-1948**

Tons—2,000 Lbs.

TOTALS By Grades.	Pulp Produced By U. S. Mills for Sale in Domestic Market—1939	Pulp Imported Into United States—1939	Pulp Produced By U. S. Mills for Sale in Domestic Market—1945	Pulp Imported Into United States—1945	Pulp Produced By U. S. Mills for Sale in Domestic Market—1946	Pulp Imported Into United States—1946	Pulp Produced By U. S. Mills for Sale in Domestic Market—1947	Pulp Imported Into U. S.—1947	Pulp Produced By U. S. Mills for Sale in Domestic Market—1948	Pulp Imported Into U. S.—1948
Total—All Grades .....	1,049,753	2,035,249	1,455,667	1,754,065	1,294,794	1,794,562	1,385,272	2,331,648	1,397,300	2,177,172
Total—Sulphite .....	685,774	1,135,302	945,150	1,045,753	930,601	1,043,617	1,003,072	1,268,708	1,003,202	1,233,523
Bleached Sulphite .....	464,296	474,109	738,461	388,456	777,709	425,028	836,042	537,165	823,963	557,039
Rayon, Special Chemical .....	106,760	88,052	346,541	146,032	289,809	202,375	390,728	248,606	401,402	239,842
Other .....	319,687	386,057	391,920	242,424	487,900	222,653	445,314	288,559	422,561	317,197
Unbleached Sulphite .....	219,012	661,193	206,689	657,297	152,892	618,589	167,030	731,543	179,239	676,484
Total—Sulphate .....	143,614	654,419	344,064	452,428	177,290	477,603	190,682	718,536	197,951	615,499
Bleached Sulphate .....	77,786	108,252	113,485	91,996	47,929	79,697	48,464	241,020	67,169	277,989
Unbleached Sulphate .....	65,793	946,167	230,579	360,432	129,361	397,906	142,218	477,516	130,782	337,510
Total Groundwood .....	30,194	227,432	52,779	222,710	55,310	239,436	60,880	308,946	67,554	290,479
Total Soda .....	86,591	8,952	83,398	21,157	85,891	19,740	72,603	21,203	69,212	24,843
Total Semi-Chemical .....	.....	.....	.....	.....	.....	.....	0	.....	.....	.....
Total—Miscellaneous, Damaged and Off-Quality .....	16,189	192	30,276	12,017	45,702	14,166	58,035	14,255	59,381	12,828

\*Includes pulp imported by U. S. companies from wholly owned or affiliated companies in Canada.

"Pulp Produced by U. S. Mills for Sale in Domestic Market" includes that part of the stocks on hand at the end of the year intended for future shipment to domestic buyers. Imports include pulp to U. S. companies from wholly owned or affiliated companies in Canada. Imports are latest revised U. S. Dept. of Commerce figures.

Source: United States Pulp Producers Association.



**Y**our flanged pipe fittings will handle corrosive fluids economically and without interruption—if they are cast of *ESCO* corrosion resisting stainless steel.

For use with common corrosives *ESCO* standard analyses—AISI types 304, 316, 317, 347—have proved satisfactory. To combat unusually severe conditions *ESCO* offers special analyses including Alloy 20 (Duriron license) and duPont specifications 820A and 820B. As a permanent identification, the metallurgical type is cast on each fitting.

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## RECORD OF TYPICAL PULP PRICES IN THE UNITED STATES

	Domestic Bleached Kraft		Norwegian Bleached Sulfite		Swedish Bleached Sulfite		Domestic Bleached Sulfite		Swedish Unbleached Sulfite		Swedish Unbleached Kraft		Canadian Bleached Sulfite		Canadian Bleached Kraft		Canadian Unbleached Sulfite	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
*1939			\$60.00	\$43.00	\$50.00	\$50.00	\$50.00	\$36.00	\$42.50	\$28.00								
			(Del.)	(Dock)			(Del.)	(Dock)	(Del.)	(Dock)	\$86.00 Del.							\$74.00 Del.
**1944			\$86.00	\$82.00	\$86.00	\$86.00 Del.	\$74.00	\$70.00	\$73.00	\$69.00	94.00 Del.							82.00 Del.
***1946			\$94.00	\$91.00	94.00 Del.		82.00	79.00	82.00	79.00								
			High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
1947			\$180.00	\$120.00	\$135.00	\$115.00	\$155.00	\$95.00	\$150.00	\$90.00								
April, 1948		\$155.00			\$195.00	\$185.00	166.00	126.00	157.00	140.00	155.00	147.50	\$190.00	\$135.00	\$195.00	\$150.00	\$126.00 Del.	
April, 1949	\$136.00	\$130.00	\$125.00		\$132.50		\$130.00	\$126.00	\$122.50		\$112.50		\$130.00		\$136.00		\$118.00 Del.	
	(Del.)	(Del.)	(Dock)		(Dock)		(Del.)		(Dock)		(Dock)		(Del.)		(Del.)		(Del.)	

Bleached sulfite pulp was priced at \$80 in the late 1920's but then took deep dips in the 1930's—as low as \$35, which was a serious threat to the continued existence of a U. S. industry.

\*Regarding 1939 prices, these prices are considered representative, but it is difficult to get dependable and authentic data.

\*\*First increase in 3½ years of war period under OPA came in early 1944.

\*\*\*Another OPA increase was allowed on April 11, 1946. OPA controls were released in December, 1946.

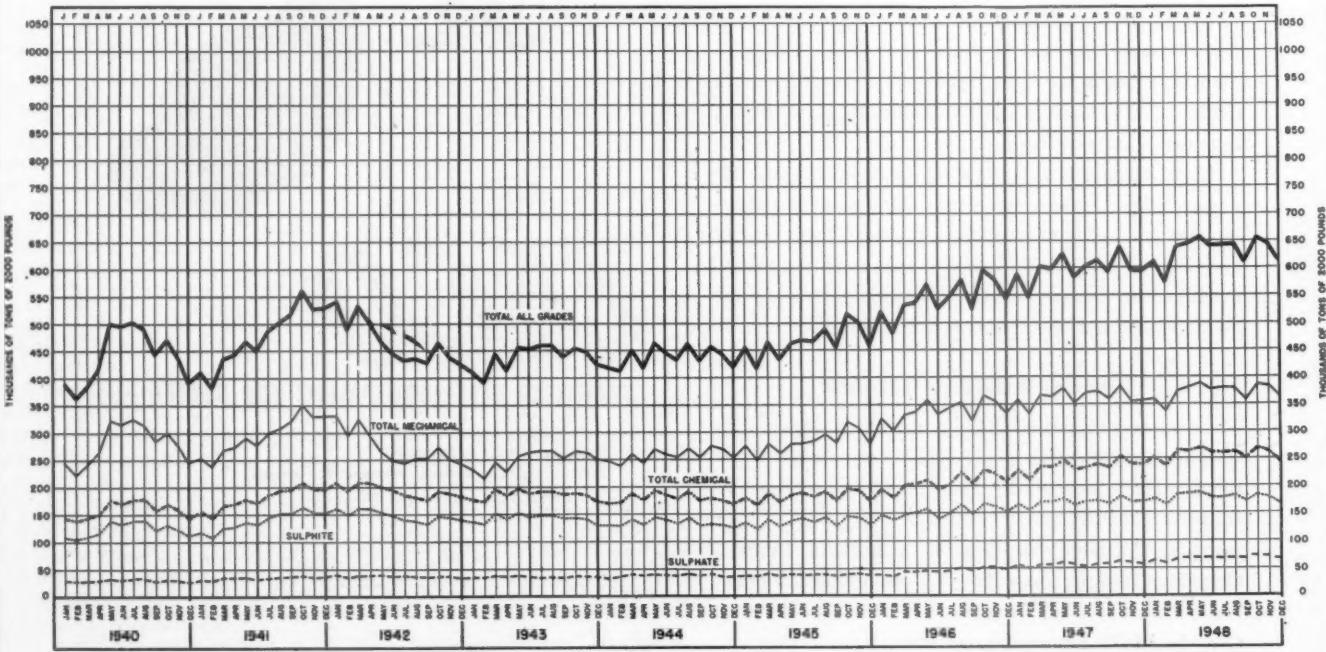
## CANADIAN PULP PRODUCTION

(Tons of 2,000 lbs.)

	Mechanical Tons	Sulfite Tons	Alkaline Tons	Total Tons		Mechanical Tons	Sulfite Tons	Alkaline Tons	Total Tons
1920	1,090,114	654,273	188,487	1,922,774	1935	2,458,000	1,025,000	206,000	3,689,000
1921	931,560	476,929	131,337	1,539,826	1936	2,910,338	1,168,927	273,494	4,352,759
1922	1,241,185	678,878	217,862	2,137,925	1937	3,308,517	1,373,232	312,741	4,994,490
1923	1,449,106	749,668	224,812	2,413,586	1938	2,650,000	925,000	258,000	3,833,000
1924	1,427,782	768,035	218,207	2,414,024	1940	2,738,011	1,028,820	313,628	4,080,459
1925	1,621,917	842,785	242,207	2,706,909	1941	3,305,484	1,480,545	399,267	5,290,762
1926	1,901,268	995,203	256,074	3,152,545	1942	3,494,922	1,664,516	426,743	5,720,847
1927	1,922,124	1,016,060	262,512	3,200,696	1943	3,260,097	1,753,453	459,254	5,472,804
1928	2,127,699	1,117,227	256,969	3,501,895	1944	2,998,913	1,712,571	441,421	5,152,905
1929	2,420,774	1,236,232	250,104	3,907,110	1945	3,076,296	1,609,629	467,726	5,153,651
1930	2,283,130	1,076,804	188,253	3,548,187	1946	3,341,920	1,639,684	478,740	5,460,344
1931	2,016,480	941,586	145,156	3,103,222	1947	3,997,848	1,830,017	562,233	6,390,098
1932	1,696,021	941,579	144,367	2,781,967	1948	4,280,791	2,030,137	699,070	7,009,998
1933	1,859,049	937,313	182,988	2,979,350		4,392,680	2,139,406	816,438	7,348,524
1934	2,340,441	1,020,493	205,980	3,566,914					

Source—Dominion Bureau of Statistics except for the last year which is estimated by Daily Mill Stock Reporter.

## CANADIAN WOOD PULP PRODUCTION



Source: Canadian Pulp and Paper Association

UNITED STATES PULP PRODUCERS ASSOCIATION

January 1st, 1949

# RAY SMYTHE

501 Park Bldg.  
Portland 5, Oregon

B<sup>E</sup>acon 0502 • B<sup>E</sup>acon 2238

PHONES:

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Rice Barton Corporation Paper Making Machinery; Paper Machines.

Rice Barton Research Corporation DynoPulpers; DynoFiners

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Atwood & Morrill Company Relief, Flow, Throttle, Steam Valves, Condensate Drainers—and float valves—Pressure Regulators.

Carthage Machine Company Chippers; Re-Chippers; Wet Machines; Wood Room Equipment.

Langdon Type Collapsible Winding Shafts.

Nortmann-Duffke Company Perforated Plates—any alloy.

Shenango-Penn Mold Company Centrifugal Castings; Bronze and Alloys; Shaft Sleeves; Bushings; Roll Shells; Ingot Molds.

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Samuel C. Rogers & Company Knife and Saw Grinders.

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Clausen (Patented) Screen Plate Bars For use in Wooden Vat Flat Screens.

Smythe Multivat Flat Screens (Patented U. S. and Canada) Eccentric Drive—Bronze Vats—Manufactured and sold in Canada by Hydro-Turbo Company Limited, Montreal, Quebec.

sumption to the less costly domestic and Canadian pulps.

"Prices of overseas pulp played a dominant role in this development. Confronted with reportedly higher production costs (especially of pulpwood) and an increasing need for dollar exchange, and encouraged by an acute world demand, Swedish and Finnish pulp shippers, for most of the year, maintained prices representing premiums of as much as \$40 to \$75 per ton over those of United States and Canadian suppliers. Despite this disparity in raw material costs, domestic pulp importers during the first half of 1948 brought in 30 per cent more pulp from northern Europe than in the first six months of the previous year. The predominant gain, however, was made in receipts from Finland.

"In September, Sweden discontinued its Business Equalization Tax which since mid-1947 had added about \$12.50 per ton to the export price of all chemical grades. She also announced a reduction of \$15 to \$20 per ton in export pulp prices for fourth quarter 1948 delivery. Finnish exporters promptly paralleled these cuts. Notwithstanding these somewhat belated adjustments and the high promise of the import figures for the first half of the year, total 1948 imports from northern Europe declined 27 per cent below the

preceding year, being 574,000 tons as compared to 786,000 tons in 1947. Swedish pulp lost over 30 per cent and Finnish 20 per cent in a comparison of imports in the two 12-month periods. The year 1948 ended with the pulp industry of northern Europe hoping that 1949 would witness a revival of their pulp market in the United States. Such a revival is regarded in Swedish industry circles as dependent, to a considerable degree, upon an adjustment of the dollar-Krona relationship; a

Bureau of Census statistics of U. S. pulp imports are shown in the figures below:

To U. S. from:	1948 Tons	1947 Tons
Canada	1,593,543	1,522,759
Newfoundland	7,137	7,854
Mexico	1,054	7,342

**TOTAL NORTH AMERICA** 1,601,734 1,537,955

**Sweden** 384,583 555,215

**Finland** 175,900 223,973

**Norway** 13,218 9,577

**Russia** 4,928

**Austria** 424

**TOTAL EUROPE** 574,125 793,693

**TOTAL WORLD** 2,175,859 2,331,648

## U. S. PULP STATISTICS PREPARED BY U. S. PULP PRODUCERS ASSOCIATION

All data are in tons of 2000 pounds, air dry weight. All 1947 Census data are based on 1947 Census of Manufacturers. All 1948 Census data are preliminary and based on monthly reports to U. S. Bureau of Census. It is believed that some pulp produced and sold as unbleached pulp is later bleached at the paper mills and reported as consumption of bleached pulp. This accounts for some seeming discrepancies between new supply, consumption and change in stocks.

**Capacity**—Based on reports to the U. S. Pulp Producers Association. Bleached capacity is maximum bleaching capacity of the mills' bleaching facilities.

**Production**—TOTAL: U. S. Bureau of Census for all major grades. Other grades estimated from Census Bureau combined data. MARKET: As reported to U.S.P.P.A. for all grades except defibrated. Defibrated data estimated from Census data.

**Imports**—TOTAL: U. S. Bureau of Census except bleached, semi-bleached and unbleached sulfate, which have been estimated from Census Bureau's total sulfate imports. MARKET: Estimates by U.S.P.P.A., based on total imports minus receipts of "own pulp" from Canada as reported by Bureau of Census.

**Exports**—U. S. Bureau of Census.

**New Supply**—Production plus Imports minus Exports.

**Consumption in Non-Paper**—Estimates by U.S.P.P.A. for pulp consumed by producers of rayon, cellophane, etc.

**Consumption in Paper & Board Mills and Inventories at Pulp, Paper & Board Mills**—TOTAL & MARKET: Bureau of the Census for all major grades. Other grades estimated from Census Bureau's combined totals.

## MARKET SULFITE

	1947	1948	% Change '47-'48
Production	1,098,539	1,089,047	- 1
Imports	1,089,704	1,055,601	- 3
Exports	108,091	84,978	- 21
New Supply	2,080,152	2,059,670	- 1
Consumption	1,972,948	2,046,732	+ 4

	In Paper & Board	In Non-Paper	Inventory Dec. 31	At Pulp, Pa. & Bd.	Mills	310,858	314,220	+ 1
	1,432,948	1,453,732	540,000	593,000				+ 10

## TOTAL BLEACHED SULFITE

	1947	1948	% Change '47-'48
Capacity	1,980,962	2,064,956	+ 4
Production	1,901,945	1,909,402	0
Imports	537,185	557,039	+ 4
Exports	54,234	31,288	- 42
New Supply	2,384,876	2,435,153	+ 2
Consumption	2,360,443	2,455,881	+ 4

	In Paper & Board	In Non-Paper	Inventory Dec. 31	At Pulp, Pa. & Bd.	Mills	181,8443	1,855,881	+ 2
	542,000	600,000						+ 11

## MARKET BLEACHED SULFITE

	1947	1948	% Change '47-'48
Production	884,640	854,263	- 3
Imports	441,611	468,038	+ 6
Exports	54,234	31,288	- 42
New Supply	1,272,017	1,291,013	+ 1
Consumption	1,233,916	1,303,560	+ 6

	In Paper & Board	In Non-Paper	Inventory Dec. 31	At Pulp, Pa. & Bd.	Mills	693,916	710,560	+ 2
	540,000	593,000						+ 10

## TOTAL PAPER GRADES OF BLEACHED SULFITE

	1947	1948	% Change '47-'48
Production	1,493,249	1,487,478	0
Imports	288,559	317,197	+ 10
Exports	43,546	15,361	- 65
New Supply	1,738,262	1,789,314	+ 3
Consumption	1,720,990	1,804,881	+ 5

	In Paper & Board	In Non-Paper	Inventory Dec. 31	At Pulp, Pa. & Bd.	Mills	1,706,990	1,791,881	+ 5
	14,000	13,000						- 7

\*Includes any dissolving pulp at paper and board mills.

## TOTAL DISSOLVING AND SPECIAL CHEMICAL

	1947	1948	% Change '47-'48
Production	408,696	421,924	+ 3
Imports	248,606	239,842	- 4
Exports	10,688	15,927	+ 49
New Supply	646,614	645,839	0
Consumption	639,453	651,000	+ 2

	In Paper & Board	In Non-Paper	Inventory Dec. 31 at Pulp Mills	11,312	5,554	- 51
	528,000	587,000				

## MARKET DISSOLVING AND SPECIAL CHEMICAL

	1947	1948	% Change '47-'48
Production	405,302	416,067	+ 3
Imports	248,606	239,842	- 4
Exports	10,688	15,927	+ 49
New Supply	643,220	639,982	- 1
Consumption	637,453	644,000	+ 1

	In Paper & Board	In Non-Paper	Inventory Dec. 31 at Pulp Mills	11,312	5,051	- 55
	526,000	580,000				

## Marathon: waxing and carton



At Menominee, Michigan, the recently acquired mill of the Marathon Corporation, shown above, is responsible for a considerable volume of this old-line company's high-quality waxing papers. A new Beloit Yankee Fourdrinier contributes to the mill's production. Four Beloit machines are in Marathon's mill at Rothschild, Wisconsin, and two at Ashland, Wisconsin, installed more than 30 years ago. There are also two at Menasha, Wisconsin, built more than 50 years ago. All have since been rebuilt with Beloit equipment and are still producing efficiently.—*Beloit Iron Works, Beloit, Wisconsin.*

WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE!



**BELOIT**  

---

**PAPER MACHINERY**

**MARKET PAPER GRADES OF BLEACHED SULFITE**

	1947	1948	% Change
Production	479,338	438,196	- 9
Imports	193,005	228,196	+ 18
Exports	43,546	15,361	- 65
New Supply	628,797	651,031	+ 4
Consumption	596,463	659,560	+ 11
In Paper & Board	582,463	646,560	+ 11
In Non-Paper	14,000	13,000	- 7
Inventory Dec. 31 At Pulp, Pa. & Bd.	131,342	134,918	+ 3

\*Includes any dissolving pulp at paper and board mills.

**TOTAL UNBLEACHED SULFITE**

	1947	1948	% Change	
Production	894,017	901,814	+ 1	
Imports	731,648	676,484	- 8	
Exports	53,857	53,690	0	
New Supply	1,571,808	1,524,608	- 3	
Consumption	In Paper & Board	1,463,728	1,477,047	+ 1
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	205,921	213,112	+ 3

**MARKET UNBLEACHED SULFITE**

	1947	1948	% Change	
Production	213,899	234,784	+ 10	
Imports	648,093	587,563	- 9	
Exports	53,857	53,690	0	
New Supply	808,135	768,657	- 5	
Consumption	In Paper & Board	739,032	743,172	+ 1
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	168,199	174,251	+ 4

**TOTAL SULFATE**

	1947	1948	% Change	
Capacity	5,495,495	6,314,790	+ 15	
Production	5,356,710	6,013,696	+ 12	
Imports	716,585	615,499	- 14	
Exports	19,519	6,881	- 65	
New Supply	6,053,776	6,622,314	+ 9	
Consumption	In Paper & Board	5,901,456	6,663,312	+ 13
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	6,000	9,000	+ 50
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	243,693	225,754	- 7

**MARKET SULFATE**

	1947	1948	% Change	
Production	211,107	207,507	- 2	
Imports	577,248	466,316	- 19	
Exports	19,519	6,881	- 65	
New Supply	768,836	666,942	- 13	
Consumption	In Paper & Board	728,177	720,177	- 1
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	6,000	9,000	+ 50
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	191,839	162,299	- 15

**TOTAL BLEACHED SULFATE**

	1947	1948	% Change	
Capacity	1,413,396	1,537,659	+ 9	
Production	908,911	1,040,055	+ 14	
Imports	218,579	251,098	+ 15	
Exports	2,187	716	- 67	
New Supply	1,125,303	1,290,438	+ 15	
Consumption	In Paper & Board	1,106,409	1,305,283	+ 18
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	5,000	5,000	0
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	65,499	67,140	+ 2

**MARKET BLEACHED SULFATE**

	1947	1948	% Change	
Production	47,423	63,701	+ 34	
Imports	146,529	160,034	+ 9	
Exports	2,187	716	- 67	
New Supply	191,765	223,019	+ 16	
Consumption	In Paper & Board	185,693	246,573	+ 33
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	5,000	5,000	0

**TOTAL SEMIBLEACHED SULFATE**

	1947	1948	% Change	
Production	193,156	224,751	+ 16	
Imports	20,490	26,890	+ 31	
Exports	0	0	0	
New Supply	213,646	251,641	+ 18	
Consumption	In Paper & Board	198,857	251,465	+ 26
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	7,060	7,493	+ 6

**MARKET SEMIBLEACHED SULFATE**

	1947	1948	% Change	
Production	2,642	3,933	+ 49	
Imports	12,824	13,792	+ 8	
Exports	0	0	0	
New Supply	15,466	17,725	+ 15	
Consumption	In Paper & Board	14,923	17,556	+ 18
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	4,494	4,239	- 6

**TOTAL UNBLEACHED SULFATE**

	1947	1948	% Change	
Production	4,254,643	4,748,890	+ 12	
Imports	477,516	337,510	- 29	
Exports	17,332	6,165	- 64	
New Supply	4,714,827	5,080,235	+ 8	
Consumption	In Paper & Board	4,596,190	5,106,564	+ 11
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	1,000	4,000	+ 300
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	171,134	151,121	- 12

**MARKET UNBLEACHED SULFATE**

	1947	1948	% Change	
Production	161,042	139,873	- 13	
Imports	417,895	292,490	- 30	
Exports	17,332	6,165	- 65	
New Supply	561,605	426,198	- 24	
Consumption	In Paper & Board	528,561	460,048	- 13
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	1,000	4,000	+ 300

**TOTAL SODA**

	1947	1948	% Change	
Capacity	504,801	541,125	+ 7	
Production	491,580	509,864	+ 4	
Imports	21,203	24,843	+ 17	
Exports	569	551	- 3	
New Supply	512,214	534,156	+ 4	
Consumption	In Paper & Board	520,651	522,278	0
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	519,651	521,278	0
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	1,000	1,000	0
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	21,630	24,257	+ 12

**MARKET SODA**

	1947	1948	% Change	
Production	74,033	69,827	- 6	
Imports	21,203	24,843	+ 17	
Exports	569	551	- 3	
New Supply	94,667	94,119	- 1	
Consumption	In Paper & Board	89,759	82,209	- 8
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	88,759	81,209	- 9
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	1,000	1,000	0
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	16,078	17,574	+ 9

**TOTAL GROUNDWOOD**

	1947	1948	% Change	
Capacity	2,446,116	2,710,224	+ 11	
Production	2,049,814	2,175,107	+ 6	
Imports	308,946	290,479	- 6	
Exports	0	0	0	
New Supply	2,358,760	2,465,586	+ 5	
Consumption	In Paper & Board	2,343,110	2,457,813	+ 5
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	2,323,110	2,438,813	+ 5
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	20,000	19,000	- 5
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	62,556	75,249	+ 20

**MARKET GROUNDWOOD**

	1947	1948	% Change	
Production	60,880	67,554	+ 11	
Imports	189,814	188,078	- 1	
Exports	0	0	0	
New Supply	250,694	255,632	+ 2	
Consumption	In Paper & Board	233,603	256,657	+ 10
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	38,065	42,513	+ 12

**TOTAL SCREENINGS, OFF-QUALITY**

	1947	1948	% Change	
Production	114,483	139,877	+ 22	
Imports	14,255	12,828	- 10	
Exports	0	0	0	
New Supply	126,821	151,333	+ 19	
Consumption	In Paper & Board	122,000	149,541	+ 23
Inventory Dec. 31 At Pulp, Pa. & Bd.	Mills	1,000	1,000	0

**MARKET SCREENINGS, OFF-QUALITY AND SEMICHEMICAL**

	1947	1948	% Change





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It is in the finishing room that the value of unit responsibility shows up the most. An improved finished product reflects the fine performance of all equipment which entered into its making . . . from the turbine generator in the powerhouse to the motor driving this supercalender.

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Westinghouse "know-how" can be counted on both for dependable operation and for proper heat balance between process steam and steam for power.

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J-94758

# PRODUCTIVE POWER

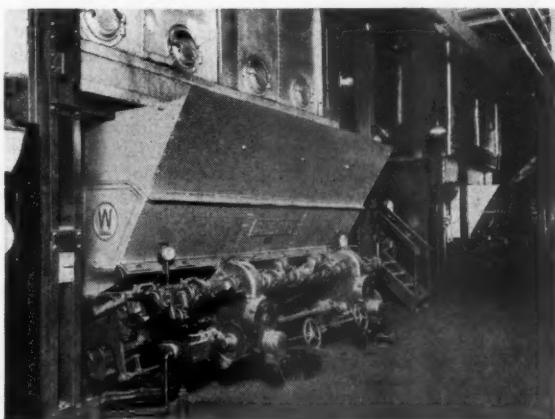
**"WESTINGHOUSE-EQUIPPED THROUGHOUT" MEANS SIMPLIFIED ORDERING, QUICKER INSTALLATION, MORE EFFICIENT OPERATION**

Putting power to work *productively* can be a major problem—or a simple one. When items must be selected, ordered and received from many sources, it means many chances for costly errors and delays... divided responsibility—or none at all—for performance of installed equipment.

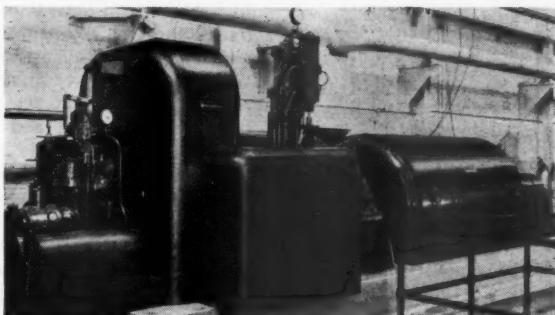
Westinghouse offers the way to simplify the job. From equipment for generation of electrical or steam

power, to the most specialized types of drives and control for its utilization, Westinghouse provides a single source of supply... one broad pair of shoulders competent to take responsibility for performance of all parts of the job.

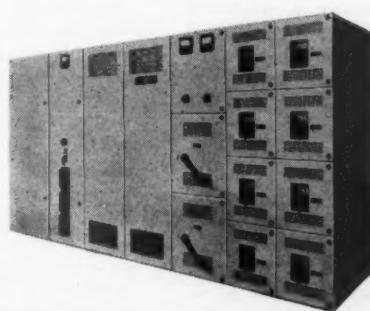
Here are a few of the places where Westinghouse unit responsibility prevents headaches... saves money... assures more productive power:



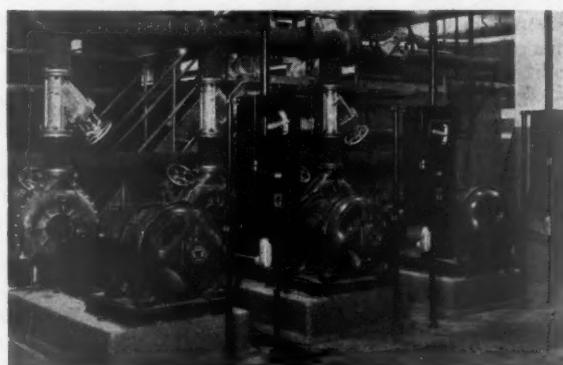
**STOKERS**—Ability to burn cheaper grades of fuel and to eliminate smoke nuisance are two outstanding advantages of Westinghouse "Link-Grade" Stokers. These stokers fire the boilers supplying power and process steam in a New York paper mill.



**TURBINES**—Constant process steam pressure and constant speed are maintained by this modern, 3,000-kw double bleeder turbine in a Wisconsin paper mill. In addition to turbines, Westinghouse supplies condensers in three types and a complete line of auxiliaries including condensate pumps, feed-water heaters, circulating pumps and steam jet air ejectors.



**SWITCHGEAR**—Westinghouse supplies a complete range of "Unitized" metal-clad switchgear that permits quick, economical installation. Unit shown contains a 750-kva, air-cooled transformer, high-voltage, metal-clad air circuit breaker, and draw-out, low-voltage air circuit breakers.



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PULP & PAPER



## ALL-TIME RECORDS SET IN '48

# Tapers Off in 1949

In the fiberboard and the paperboard field there was a sharper tapering off in early 1949 than the paper fields' markets. This was possibly a relatively greater reaction to the very rapid and tremendous expansion which had taken place in wallboard, insulating board and container board fields in just the last year or two.

Some board mills in the South were running part time or were temporarily down and new fiberboard production in the West was curtailed. The operating ratios of the member paperboard mills in the National Paperboard Association dipped to 75% in the first week of April, which compared with nearly 88% for the paper mills (this corresponded to 98% for board mills and 100% for paper mills in the corresponding week of 1948). All through the first weeks of this year, the board mills were from 7% to 1% lower than that of paper mills. The best explanations seemed to be the comparisons of expansions which had most recently taken place in the two fields.

But leaders in the fiberboard and paperboard fields—at least many of those on top—were confident that adverse conditions would end in the second quarter and that the third and fourth quarters would see demand returning to high levels. Some of the early year drop-off was seasonal, due to the usual winter decline in construction. There was also reluctance to stock up on building materials.

The growth of fiber and paperboard fields have been so sensational that we have devoted a whole section to them in this Review Number. They could slip off

quite a little and still be at levels undreamed of before the war.

For the second successive year in 1948, paperboard production in the U. S.—and this includes building boards and wet boards—went over the ten million mark and was less than half a million tons under total paper production. This compares with 6,000,000 in 1939 and only 4,000,000 in 1934.

The demand for overseas shipment in sturdy V-boxes and other new type containers pushed paperboard production even ahead of paper output in 1943, 1944 and 1945. Board production was between 8 and 9 million in those years and never before had board output exceeded paper. In World War I board production had only been between one and two million tons annually. Since 1945, the paper field regained its supremacy but not by much margin. The all-time record for paperboard and building boards of 10,836,307 tons in 1948 was 430,000 tons over the previous record in 1947.

All kinds of building materials made of pulp reached 2,562,000 tons in 1948, 213,000 tons over 1947, according to the Bureau of the Census. Most of this increase was in building board, consisting of homogeneous wall and insulating boards used largely in building construction.

### Record in Paperboard

In this section is published the U. S. Paperboard Mill Census as released by the National Paperboard Association and a chart which is based upon association data over a long period of years and is annually a feature of the Review Number. Based on reports from NPA member

mills, it shows a total of 4,969,600 tons of container board and 4,533,300 tons of boxboard produced in 1948, both figures being substantially higher than any ever before recorded in those categories. Thus many observers have been surprised that, instead of a drop-off in production of these types of board when military requirements relaxed, there was recorded a greater production than ever before.

The NPA figures show that in most categories of paperboard, production is just about double what it was in 1938. There have been some minor ups and downs in different grades of paperboard since then, but the general trend has been steadily upward.

### Consumption - Waste Paper, etc.

According to the Department of Commerce, the U. S. paperboard mills consumed 5,115,000 tons of wood pulp (a little over one-third the total consumed by all types of mills), and 5,839,484 tons of waste paper (about four-fifths of the total) in 1948. These board mills also consumed a half-million tons of straw, virtually all the straw consumed as there is only one paper mill using straw in the entire country. The wet machine mills consumed 57,125 tons of waste paper and 5,000 tons of wood pulp and 6,000 tons of rags. Building board mills included in these government figures consumed 1,055,000 tons of wood pulp and 1,216,000 cords of wood.

Waste paper was the only major fibrous material which showed a marked decline in consumption during 1948. Consumption in 1948, though second only to that of the preceding year, and greater by 70% than prewar levels, revealed a

### United States Paperboard Production, Imports, Exports and Consumption (Quantities in Tons of 2,000 Pounds)

Year—	Production	Imports	Exports	Tons Lbs., Capita Consumption	Year—	Production	Imports	Exports	Tons Lbs., Capita Consumption
1899.....	394,111	.....	.....	394,111 10.5	1939.....	6,104,968	28,610	103,384	6,030,194 92.1
1904.....	559,711	.....	.....	559,711 13.6	1941.....	8,399,960	36,882	141,250	8,293,592 125.7
1909.....	883,088	.....	.....	883,088 19.5	1943.....	8,620,434	54,234	89,705	8,566,729 126.4
1914.....	1,291,805	.....	.....	1,291,805 26.4	1945.....	8,913,736	51,189	155,020	8,809,905 126.2
1919.....	1,867,064	44,461	61,890	1,849,635 35.2	1946.....	9,490,174	42,347	109,158	9,423,363 133.4
1924.....	2,850,000	55,275	48,661	2,856,614 25.5	1947.....	10,408,972	60,109	176,502	10,292,579 143.0
1929.....	4,451,187	42,351	94,374	4,399,164 72.4	1948.....	10,836,307	75,000	145,700	10,765,607 147.0
1934.....	4,073,261	20,936	51,159	4,043,038 63.9					

Beginning with 1941, bristols have been allocated to fine papers.

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PAPERBOARD MILL CENSUS

TONS  
CONTAINER BOARDS

GRADES	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
LINERS										
Jute	794,300	796,400	1,074,300	820,800	1,088,000	1,164,600	1,185,700	1,265,400	1,353,200	1,167,500
Kraft Cylinder	279,800	246,200	285,300	276,700	152,200	93,200	97,100	144,500	201,700	190,600
Kraft Fourdrinier	803,800	923,300	1,201,300	1,174,700	1,252,900	1,340,400	1,308,000	1,311,900	1,596,400	1,902,700
Total Kraft	1,085,600	1,169,500	1,486,600	1,451,400	1,405,100	1,453,600	1,405,100	1,456,400	1,798,100	2,095,300
TOTAL LINERS	1,877,900	1,965,900	2,560,900	2,272,200	2,493,100	2,598,200	2,590,800	2,721,800	3,151,300	3,260,800
CORRUGATING MATERIALS										
Straw, Bogus, Etc.	574,900	611,400	806,400	662,800	872,100	969,500	956,900	1,088,700	1,281,900	1,254,700
Kraft	263,000	292,000	326,200	269,300	157,600	120,400	154,600	174,400	138,400	132,700
TOTAL CORR. MATERIALS	837,900	903,400	1,132,600	932,100	1,029,700	1,089,900	1,111,500	1,263,100	1,420,300	1,387,400
CHIP										
Corrugating	75,900	75,500	77,900	72,200	83,800	96,800	83,000	114,200	81,600	87,300
Solid Fibre	208,600	202,800	273,000	350,800	332,700	338,200	314,500	214,600	248,900	234,100
TOTAL CHIP	284,500	278,300	350,900	403,000	416,500	435,000	397,500	328,800	330,500	321,400
TOTAL	3,000,300	3,147,600	4,044,400	3,607,300	3,939,300	4,123,100	4,099,800	4,313,700	4,902,100	4,969,600
BOXBOARDS										
Folding Box	1,385,100	1,413,100	1,749,300	1,560,500	1,737,700	1,785,400	1,872,000	2,286,400	2,239,400	2,130,700
Set-Up Box	585,700	613,200	731,500	615,900	599,000	543,100	511,600	474,100	601,500	639,500
Total	1,970,800	2,026,300	2,480,800	2,176,400	2,336,700	2,328,500	2,385,600	2,760,500	2,840,900	2,770,200
Other	976,400	1,144,200	1,365,800	1,363,000	1,361,000	1,484,300	1,408,400	1,388,000	1,574,500	1,763,100
TOTAL	2,947,200	3,170,500	3,846,600	3,539,400	3,697,700	3,812,800	3,792,000	4,148,500	4,415,400	4,533,300
SUMMARY										
JUTE, Liner, Corr., Chip										
Boxboard, Etc.	4,474,000	4,632,900	5,903,400	5,220,400	5,857,700	6,117,600	6,081,300	6,586,400	7,067,100	6,972,900
KRAFT, Liner, Corr., Etc.	4,731,500	1,685,200	1,987,600	1,926,300	1,779,300	1,818,300	1,810,500	1,875,800	2,250,400	2,530,000
TOTAL ALL GRADES	5,947,500	6,318,100	7,891,000	7,146,700	7,637,000	7,935,900	7,891,800	8,462,200	9,317,500	9,502,900

Issued: March, 1949

NATIONAL PAPERBOARD ASSOCIATION

U. S. Dried Food Packs and Glassed Food Packs \*

(Thousands of Tons)

Large Portion in Fiber Cases and Cartons

Year	Fruits	Beans & Peas	Eggs	Milk, edible	Dehydrated Vegetables	TOTAL	TOTAL Glassed Foods
1946	504	1,131	63	420	27	2,145	....
1947	592	1,187	43	422	25	2,269	242
1948	459	1,221	22	416	90	2,208	217

\*Glassed foods in millions of cases. All packed in fiber cartons.

consistantly lower month by month trend as compared with 1947. December, in fact, showed less waste paper utilized by the industry than in any month since July 1946, said the Department of Commerce. Although mill inventories of waste paper on Dec. 31, 1948 were slightly less than on the same date of 1947, the close of 1948 found packers' warehouses in some important metropolitan areas, especially that of New York City, filled to the bursting point.

A Bureau of Census and Department of Commerce report on paperboard production, including certain building boards, follows (it will be noted these figures are somewhat higher than the Paperboard Mill Census of the National Paperboard Association members—also featured in this section. The government has included large categories of building and miscellaneous board not reported by the NPA):

U. S. Paperboard and Building Board Production

(According to U. S. Department of Commerce—Bureau of Census—in Thousands of Tons)

	Paper-board*	Wet Machine Board**	Building Board
1946 .....	8,396	138	956
1947 .....	9,186	150	1,072
1948 .....	9,441	140	1,273

\*Container boards, box boards, cardboard and other.

\*\*Shoe board, binder board and other.

Prices of waste paper, with the exception of the news grades, ended 1948 at or near the year's low point. The recession carried the higher priced grades such as cuttings and shavings down to figures from 35% to 50% below those prevailing at the beginning of the year.

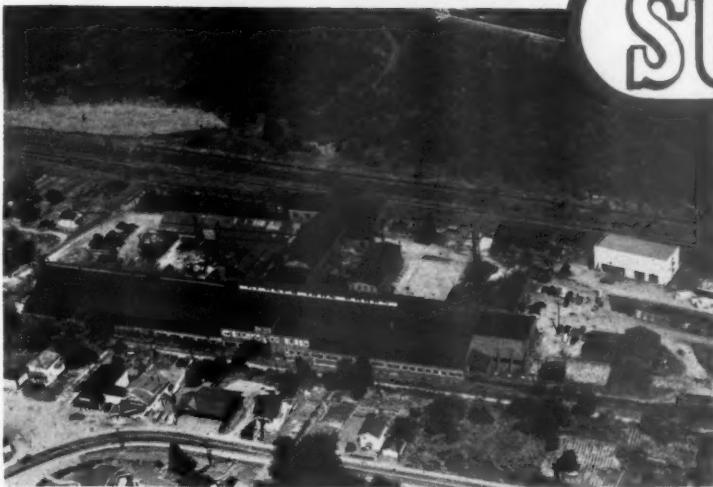
There has been a great deal of interest aroused in recent years in the hardboard and softboard classes of insulating or building boards.

Almost a "rash" of plants have broken out in the west following upon the completion over a year ago of the Simpson Logging Co.'s Fibreboard Division at Shelton, Wash., making a coated board and similar products. The first Masonite plant outside of Laurel, Miss., in this country, was going into operation at Ukiah, Calif. Stimson Lumber Co. built a plant at Forest Grove, Ore., a Canadian plant known as Civic Veneer Co. is operating at New Westminster, B. C. For Dee, Ore., a project of Oregon Lumber Co., and a MacMillan project for British Columbia also were on paper.

The same kind of expansion was going on in the South. Johns-Manville started

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### U. S. Frozen Food Production

(Millions of Pounds)

(Vegetables, juices, eggs, specialties, mostly packed in fiber cartons and cases—others to a less degree)

Year	Juices &									TOTAL
	Fruits	Vegetables	Concentrates	Eggs	Fish	Specialties	Poultry**	Meats**		
1936-40 (Avg.)	138	66	...	178	183	...	101	294	960	
1946	528	453	5	392	280	45	317	275	2,295	
1947*	344	348	10	371	247	50	317	499	2,186	
1948	387	390	33	345	292	40	161	443	2,091	

\*Revised. \*\*Year-end stocks, no pack data compiled.

### U. S. Canned Food Packs

(Millions of Cases)

Large Portion in Fiber Cases and Cartons

Year	Large Portion in Fiber Cases and Cartons							Fruit & Veget. Juices	TOTAL
	Fish	Meat	Poultry	Baby foods	Non-Seas. Soups	Veget. Milk	Seasonal Vegets.		
1946	18	27	2	15	48	53	73	79	630
1947	22	21	1	12	40	43	77	72	534
1948	22	24	2	17	42	48	81	70	563

\*Glassed foods in millions of cases. All packed in fiber cartons.

up a new plant at Natchez, Miss., Armstrong Cork at Macon, Ga., and Celotex, big users of cane bagasse, and Flintkote expanded in Louisiana.

The clean-up of the forests, salvaging of much unused wood material which had been used as fuel or left on the ground, was the raw material and new building methods provided stimulus. In early 1939, the upsurge was definitely leveling off.

Here are latest available figures from the Department of Commerce indicating the growth of these projects in tons:

#### UNITED STATES PRODUCTION OF BUILDING BOARDS

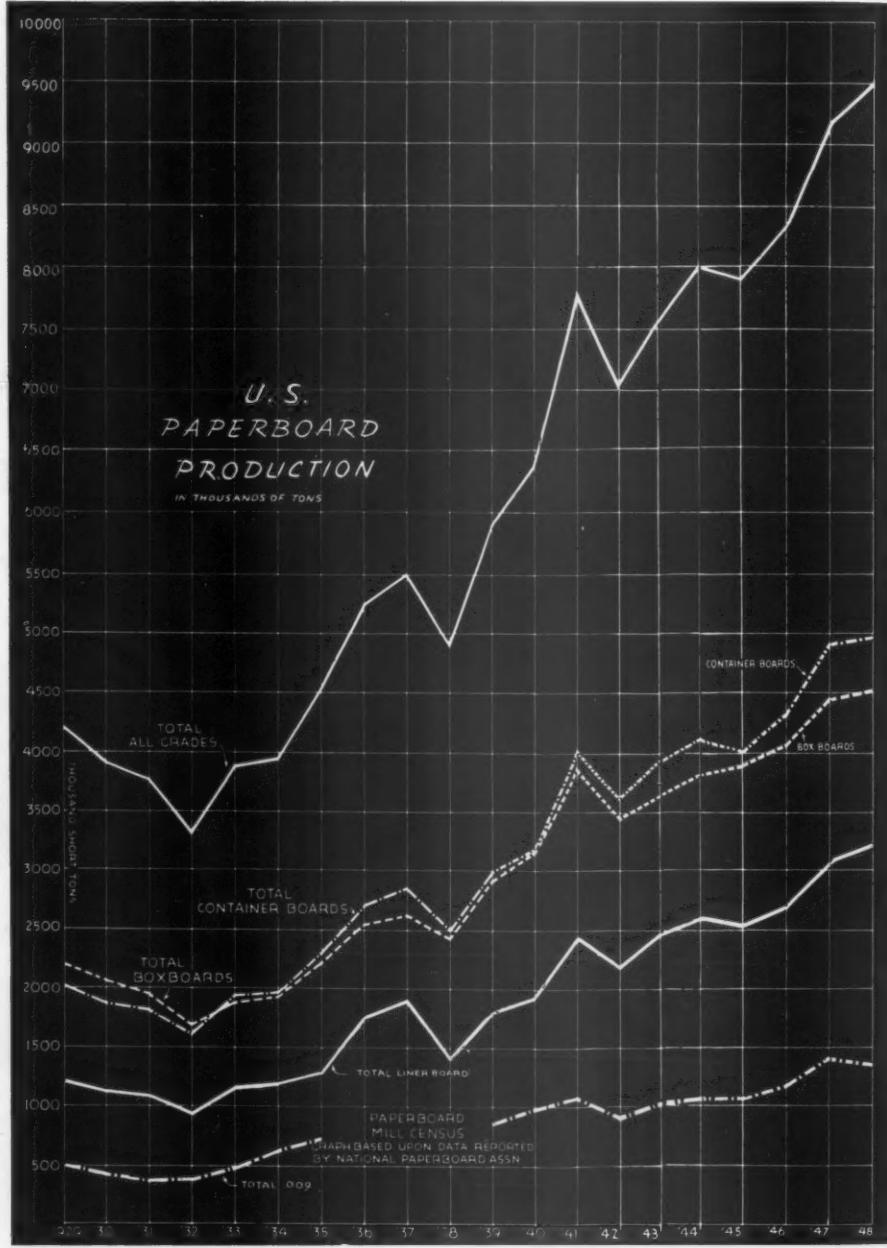
Year	Wall-board	Insulating board
1941	254,477	362,033
1943	301,333	577,473
1945	300,087	646,017
1947	301,551	770,821

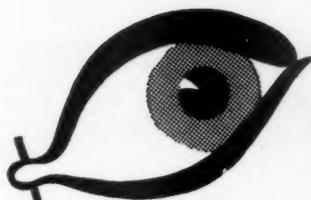
#### Sq. Ft. Building Board

The U. S. Census Bureau also issues figures for these building boards which are measured in square feet of production rather than tons (1,000 sq. ft. of  $\frac{1}{2}$ -inch board is equivalent to 750 lbs.). There may be some overlapping in these tables (there definitely has been in certain years) but here are the government statistics for "total building boards—hardboard in  $\frac{1}{8}$ -inch equivalent, laminated fiberboard in  $\frac{3}{16}$ -inch equivalent, and structural insulation in  $\frac{1}{8}$ -inch equivalent" with PULP & PAPER'S estimate for last year:

#### U. S. BUILDING BOARD PRODUCTION

Year	Millions of Square Feet
1948	2,839
1947	2,810
1946	2,776
1945	2,742
1944	2,663
1943	2,645
1942	2,571
1941	2,240
1940	1,836
1939	1,258





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RUBBER COVERED KRAFT BLEACH WASHERS

BROWN STOCK WASHERS

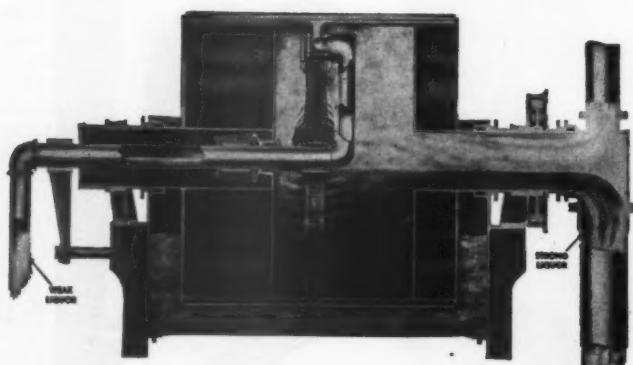
RUBBER COVERED BLEACH STOCK DECKERS

ALL STEEL BROWN STOCK DECKERS

ALL ADD UP TO

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OLIVER "RINGVALVE" F



OLIVER "RINGVALVE" WASHER

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OLIVER "RINGVALVE" DECKER

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## THERE IS STILL A SHORTAGE

# Much Capacity Is Idle

World production of newsprint, as well as production in North America have both reached new all-time high records and still the supply is short of both the unrestricted world demand as well as the demand which is restricted by government regulations.

### New Record

More newsprint than ever before in history was being produced early this year in North America.

March, 1949, was a new all-time record and also the entire first quarter brought greatest output of any quarter in history, 8.9% more than any previous one. March output totaled 534,100 tons.

Thanks to an exhaustive and very reliable survey carried out in 1948 by the Newsprint Association of Canada, with the aid of various governmental sources, these three important facts are revealed as far as the world situation is concerned:

1. There is an over-all worldwide shortage of production as compared with demand.

2. There exists more than enough mechanical capacity to satisfy current effective demand, if all productive facilities could be fully utilized.

3. Production is increasing year by year and in 1948 exceeded the pre-war level (which then met pre-war demand) by 127,000 tons.

The world supply of newsprint in 1949, according to this survey, will be 8,535,687 tons, as compared with 8,231,372 last year and a 1935-39 average of 8,129,947.

The unrestricted world demand is calculated at 10,477,500 tons in 1949 as compared with 10,208,470 in 1948 and a 1935-39 average equalling the supply in that period.

There has only been a restricted world demand in recent years, owing to regulations beyond the control of individual consumers. This is figured at 9,025,742 tons in 1949 and 8,923,947 in 1948.

Total world machine capacity continues to show a steady annual increase and the estimate for 1949 is only 417,000 tons below the pre-war figure when capacity

was 2,356,000 tons in excess of demand. When the war ended (1946) machine capacity had fallen more than a million tons below its pre-war figure. In the three years between 1946 and 1949 nearly two-thirds of this war-time loss will have been made good, a gain of 648,000 tons of annual capacity. Of this gain 526,000 tons appears in North America and 396,000 tons is in Canada.

In both 1948 and 1949 production is calculated as short of productive capacity by more than 1½ million tons. Most of the idle capacity is in Britain (600,000), Scandinavia (330,000), other Europe (315,000) and the Orient (190,000). Most of the acute shortages of supply are in

these areas or in areas formerly supplied by them. This idle capacity does not result from physical destruction of mills during the war; it is caused by lack of pulp, lack of coal, lack of labor and the need of minor repairs. While these shortages cannot be quickly or entirely remedied, the conclusion shown by last year's survey continues to be true; the acute shortages of newsprint throughout the world (excluding North America) can be most quickly eased by restoration to production of the machine capacity standing idle today.

The Canadian organization has performed an important service in this survey by showing that the real solution to the problem, as far as the world at large is concerned, is in getting idle machinery into production again, not by shipping newsprint abroad from the U. S. and Canada.

Production shows substantial increases in each year since the war and has now surpassed the average annual pre-war figure, as shown in worldwide figures published in this section. In 1949 world production is expected to be more than 400,000 tons greater than the 1935-39 average. But in North America production in 1949 will exceed the pre-war average by 1,776,000 tons, while production in the rest of the world will be less than pre-war. This, combined with monetary and government restrictions, accounts for the violent shifts in the proportionate sharing of newsprint supply. However, since the war production has risen steadily both in North America and elsewhere.

On the basis of estimates of unrestricted demand (including the estimated United States shortage) world capacity in 1948 is 364,000 tons short of being able to meet unrestricted world demand. Demand is, and probably will for some years continue to be, restricted by monetary difficulties and other shortages.

### Engineering Improvements

The phenomenal achievements in North America in pushing up newsprint production to new all-time records has

### NEWSPRINT IN WORLD TRADE

Source: Newsprint Association of Canada and Newsprint Service Bureau of New York.

#### EXPORTS (in thousands of tons)

From:	1935-39 Average	1948	(Est.)
Canada	2,811	4,328	4,375
Newfoundland	312	375	475
Scandinavia	765	620	635
All Others	247	203	240
World	4,135	5,498	5,725

#### IMPORTS (in thousands of tons)

Into:	1935-39 Average	1948	(Est.)
U.S.A.	2,668	4,393	4,555
U.K.	474	144	138
Argentina	161	168	164
Australia	186	45	87
All Others	694	684	701
World	4,183	5,421	5,645

These tables show respectively exportable surpluses and import requirements, eliminating all newsprint which is consumed in the country of origin. They indicate the very large proportion (currently about two-thirds) of the world's newsprint supply which moves in international trade between countries, and changes which have taken place in this movement since the war. The small discrepancies between total export and import figures are presumably caused by variations of tonnage in transit at the end of each year.

# 1919 1940

1949 MARKS OUR THIRTIETH YEAR OF SERVICE TO THE PULP AND PAPER INDUSTRY ON THE PACIFIC COAST. DURING THE PAST THREE DECADES A "LOCAL INDUSTRY" HAS GROWN IN STATURE AND IMPORTANCE. IT IS OUR HOPE THAT WE HAVE CONTRIBUTED IN SOME MEASURE TO WHAT HAS BEEN ACHIEVED BY PROVIDING A SPECIALIZED SERVICE THAT HAS CREATED A BETTER UNDERSTANDING OF PACIFIC COAST PROBLEMS BY THE MANUFACTURERS OF EQUIPMENT AND SUPPLIES. IF OUR EFFORTS HAVE BEEN PRODUCTIVE, IT HAS BEEN BECAUSE OF THE SUPPORT ACCORDED US. OUR THIRTIETH ANNIVERSARY GREETING APPROPRIATELY BECOMES AN EXPRESSION OF SINCERE GRATITUDE TO OUR LOYAL FRIENDS.

*Pacific Coast Supply Company*  
PORTLAND SAN FRANCISCO

## WORLD NEWSPRINT PRODUCTION AND MECHANICAL CAPACITY

	Production		Capacity
	1935-39 Ave.	1948	1949
Canada	3,020,000	4,575,000	4,675,000
Newf'l'd	316,500	400,000	475,000
U. S. A.	907,800	850,000	870,000
Argentina	0	3,000	10,000
Brazil	4,000	25,000	45,000
Chile	4,350	6,000	14,000
Peru	0	0	1,000
Britain	961,800	291,000	896,000
Finland	436,125	330,000	548,400
Norway	205,500	154,000	212,800
Sweden	299,015	309,000	364,900
Belgium	51,820	55,000	88,000
Denmark	1,800	2,000	2,200
France	360,600	300,000	380,000
Germany	511,690	200,000	300,000
Holland	99,285	69,000	110,000
Poland	33,770	48,500	53,000
Russia	208,500	250,000	300,000
Switzerland	45,000	39,000	44,000
Austria	49,800	40,000	100,000
Bulgaria	2,000	2,000	4,400
Czecho'kia	42,800	50,000	81,000
Hungary	5,295	4,400	6,000
Portugal	0	3,300	3,300
Rumania	5,000	5,000	5,000
Italy	74,500	75,000	90,000
Spain	27,600	20,000	40,000
Turkey	0*	6,000	13,000
Yugoslavia	500	5,000	5,000
China	0	7,000	43,000
Japan	406,200	100,000	221,000
Korea	45,000	10,000	45,000
Australia	0	33,000	33,000
Total	8,139,570	8,267,200	10,079,000

\*Reliable information not available.  
Source—

been largely achieved by engineering and mechanical improvements of existing machinery. This was certainly true in Canada. But late in 1948, two brand new machines at Powell River Co. and Bowater's Newfoundland came into production and they are fully expected to reach new world speed records eventually of probably close to 1800 ft. per min. The present records of 1730 ft. for a day's run and 1650 for a month's average are held at Quebec North Shore Paper Co. in Baie Comeau, Que. At Powell River and Bowater's additions should push production at both mills to the 1,000 tons a day mark on all machines.

In the United States, the newsprint machine going in at Coosa River in Alabama, financed mainly by Southern newspapers and managed by Kimberly-Clark and the new machine started in 1948 at Southland Paper Mills in Texas are the important new additions. The old Hawley Pulp & Paper Co. of Oregon City, Ore., became Publishers Paper Co., owned by California, Oregon and other publishers, and went into 100% newsprint production. A few small mills, bought by newspapers, turned their production to newsprint. But, as an over-all observation, improvements rather than new machinery, have done most of the boosting in production.

For the Canadian newsprint industry to operate at capacity is a phenomenon of recent years, the Newsprint Association of Canada ably points out. Only in the years 1947 and 1948 has this situation existed. During the war years, shortages of wood, electric power and manpower and

## NEWSPRINT DATA: WORLD CAPACITY, DEMAND AND SUPPLY

	(in thousands of short tons)				
	Prewar	1946	1947	1948	1949
1. Existing machine capacity . . . . .	10,496	9,431	9,693	9,844	10,079
2. Capacity actually in use or Production . . . . .	8,140	7,161	7,750	8,267	8,576
3. Idle machine capacity . . . . . (line 1 minus line 2)	2,356	2,270	1,943	1,577	1,503
4. Demand, no restrictions . . . . .	8,130	8,792	9,343	10,208	10,478
5. Government restrictions . . . . .	nil	1,075	1,163	1,284	1,452
6. Probable actual demand . . . . . (line 4 minus line 5)	8,130	7,717	8,180	8,924	9,026
7. Supply obtained . . . . .	8,130	7,167	7,843	8,231	8,536
8. Shortage from actual demand . . . . . (line 6 minus line 7)	nil	550	337	693	490
9. Idle capacity — line 3 . . . . .	2,356	2,270	1,943	1,577	1,503
10. Shortage — line 8 . . . . .	nil	550	337	693	490
11. Excess idle capacity . . . . . (line 9 minus line 10)	2,356	1,720	1,606	884	1,013

\* Sources of Data: Canadian Government — Department of Trade & Commerce and all its representatives; U.S. Government — Bureau of Census, Department of Commerce and Tariff Commission; Newsprint Service Bureau, New York; Scannews, Stockholm (paper trade association); United Nations Educational, Scientific & Cultural Organisation (UNESCO); United Nations Social and Economic Council; U.K. Board of Trade; British Newsprint Rationing Committee; Cobelpa, Brussels (paper trade association); Centralny Zarzad Przemyslu Papierniczego, Lodz.

the operation of government controls in both Canada and the United States held operations to between 68 and 78% of capacity. Before the war, construction of new newsprint mills between 1920 and 1938 had created "over-capacity" in relation to current demand for Canadian newsprint and operations fell as low as 50% of capacity. Consumers did not then want as much newsprint as the industry was able to make.

When newsprint purchasers do not require as much newsprint as existing machines can produce, there is obviously no reason or purpose in manufacturers installing new machines or struggling to increase the production achieved with existing machines. But the record shows that whenever demand exceeds the ability of existing machines to produce, the Canadian newsprint industry will quickly respond by creating new capacity. This is no more than a recognition of the manufacturers' own self-interest, but the speed and size of the expansion is impressive. In the years since wartime restrictions were removed (1946-49) Canadian newsprint capacity will have increased by 321,000 tons or an average of 107,000 tons per year. As has been stated this is equivalent to the construction of a new modern, two-machine mill in each of these three years.

In fact these increases in capacity have not come from new mill construction, and have resulted only in small part from new machine installation. They have resulted from substantial expenditures on

## UNITED STATES AND WORLD SUPPLY OF NEWSPRINT

(available supply in thousands of tons)

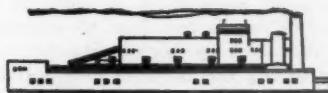
	U.S.	Rest of World	Total	Percentage in U.S.
1927.....	3,461	2,896	6,357	54.4%
1931.....	3,212	3,427	6,639	48.4
1935.....	3,230	4,377	7,607	42.5
1939.....	3,534	4,517	8,051	43.9
1946.....	4,330	2,837	7,167	60.4
1947.....	4,850	2,993	7,843	61.8
1948*....	5,230	3,001	8,231	63.5
1949*....	5,425	3,111	8,536	63.6

Sources are Newsprint Association of Canada and News Print Service Bureau (U.S.) and other reports of supply available in the years 1927-47 inclusive. Figures for 1948-49 are NAC estimates based upon reports obtained. Available supply represents tonnage from domestic production plus imports less exports.

existing machines to increase speed of operation, and from improvement in trim achieved with the cooperation of customers. There is believed to be considerable room for further expansion of production from these methods.

### Costs Are High

The main difficulty appears to arise from the fact that the present economics of the newsprint business are built upon mill construction costs of 1930. In the period between 1920 and 1935, the cost of a newsprint mill was usually estimated to be \$30-\$35,000 per daily ton. Today it is estimated that mill construction would



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## U. S. MILLS MAKING NEWSPRINT

This table, prepared by **PULP & PAPER**, shows how sharply newsprint production in the U. S. has declined over a long period of years, although there has been a slight increase, comparatively, in the past two years principally through investment by hard-pressed newspapers in mills. In fact, if a 1913 column were added, we would have to list no less than 65 companies.

In the year 1948 the former Hawley mill (Publishers' Paper Co.) was sold to a group including Los Angeles and Salt Lake City newspapers and resumed full production of newsprint. The new Southland machine came into production. The new Coosa River Newsprint Co. of Alabama is not expected to produce until 1950.

The data for 1926 and 1946 were prepared by a now defunct U. S. War Production Board committee. The 1948 figures were compiled on information gathered by this magazine. The total is somewhat higher than the 850,000-ton estimate made early in 1948 by the Newsprint Service Bureau of New York. This was due to the fact that their estimate did not include mills making newsprint from de-inked stock and also because of developments later in that year.

It is interesting to note that virtually every added ton of newsprint in the past two years has resulted from the purchase or investment in paper mills by newspaper publishers.

Of the added capacity in 1948, the portion produced by Michigan Paper Co. of Plainwell is being made from 80% de-inked paper stock.

## COMPARISON BETWEEN NUMBER OF COMPANIES PRODUCING NEWSPRINT IN U. S. IN 1926, 1946 and 1948

	Tons, Estimated Capacity	1926	1946	1948
Alexandria Paper Co.	15,000	.....	.....	.....
Algonquin Paper Co.	29,000	.....	.....	.....
Cliff Paper Co.	13,000	.....	.....	.....
Consolidated Water P. & Pa. Co.	102,000	.....	.....	.....
Crown Zellerbach Corp. (and predecessors)	174,000	200,000	190,000	.....
Cushnoc Paper Co.	20,000	.....	.....	.....
De Grasse Paper Co.	56,000	.....	.....	.....
Dells Pulp & Paper Co.	12,000	.....	.....	.....
Escanaba Paper Co.	370,000	.....	.....	.....
Finch, Pruyn & Co.	44,000	10,000	.....	.....
Flambeau Paper Co. (Div. of Kansas City Star Co.)	14,000	.....	14,000	.....
Gilman Paper Co.	17,000	.....	.....	.....
Gould Paper Co.	30,000	.....	.....	.....
Grandfather Falls Co.	11,000	.....	.....	.....
Great Northern Paper Co.	257,000	300,000	330,000	.....
Great Western Paper Co.	20,000	.....	.....	.....
Publishers Paper Co. (formerly Hawley Pulp & Paper Co.)	9,000	56,000	75,000	.....
Hennepin Paper Co.	12,000	.....	.....	.....
High Falls Pulp & Paper Co.	8,000	.....	.....	.....
Inland Empire Paper Co.	29,000	.....	17,000	.....
International Paper Co.	323,000	.....	.....	.....
Blandin Paper Co.	22,000	.....	.....	.....
Maine Seaboard Paper Co.	.....	104,000	.....	.....
Manistique Pulp & Paper Co.	20,000	.....	.....	.....
Michigan Paper Co. of Plainwell	.....	.....	15,000	.....
Minn. & Ontario Paper Co.	76,000	.....	.....	.....
Nekoosa-Edwards Paper Co.	10,000	.....	.....	.....
Northwest Paper Co.	14,000	.....	.....	.....
Oswegatchie Paper Co.	16,000	.....	.....	.....
Oswego Falls Corp.	11,000	.....	.....	.....
Pacific Paperboard Co.	.....	.....	7,000	.....
Peavey Paper Mills	.....	.....	9,000	.....
Pejepscot Paper Co.	41,000	.....	29,000	.....
St. Croix Paper Co.	55,000	75,000	89,000	.....
St. George Paper Co.	10,000	.....	.....	.....
St. Regis Paper Co.	115,000	.....	.....	.....
Sheriff Paper Mills	.....	.....	10,000	.....
Sherman Paper Co.	16,000	.....	.....	.....
Southland Paper Mills	.....	55,000	97,000	.....
Tidewater Paper Mills Co.	32,000	.....	.....	.....
Watab Paper Co.	17,000	.....	.....	.....
Waterway Paper Prod. Co.	14,000	.....	.....	.....
West End Paper Co.	13,000	.....	.....	.....
West Tacoma Newsprint Co.	.....	.....	17,000	.....
Wisconsin River Paper & Pulp Co.	25,000	.....	.....	.....
<b>TOTAL</b>	<b>1,739,000</b>	<b>820,000</b>	<b>899,000</b>	

cost \$75-\$80,000 per daily ton, to which must be added woodlands expenditures on a scale unknown twenty years ago. A single newsprint machine which could have been installed in 1930 for \$2,000,000 would today cost \$4,500,000.

The following examples from recent construction illustrate comparable costs—

(1) A newsprint machine was installed in 1930 at a cost of \$1,410,000. A similar machine, construction of which was completed this year cost \$2,830,000, a little more than double the cost of the one bought in 1930.

(2) As recently as 1941 concrete for dam construction was put in place for \$6.78 per yard. In 1947 comparable cost of construction had increased over 2½ times to \$17.43 per yard of concrete.

(3) A groundwood mill in which three lines of grinders cost \$462,000 when installed in 1930 was extended in 1947 by the addition of two more lines of grinders. On a proportionate basis three lines would have cost \$950,000, more than twice the cost of the original and comparable installation.

Notwithstanding these high costs of new construction, the record of new expenditures by the Canadian newsprint industry since 1945 is impressive. It is almost as impressive as the statistics of expenditures by the U. S. publishing industry. A recent survey by the Newsprint Association of Canada of expenditures in the three years 1946-47-48 gave the following interesting results:

### CAPITAL EXPENDITURES

	Total Amount on Mills	Specific Amount for Production of Newsprint	Expenditures on Newsprint as a Percentage of Total
1946	\$25,700,000	\$18,000,000	69%
1947	33,000,000	24,000,000	72%
1948	41,000,000	34,000,000	83%
Total		\$76,000,000	

The percentage of total expenditure made specifically on newsprint production facilities shows an interesting trend.

In addition to capital expenditures on mills the survey showed other expenditures on woodlands and related facilities as follows:

Year	Amount
1946	\$12,500,000
1947	18,000,000
1948	15,500,000
Total	\$46,000,000

The above figures indicate in the years a total capital expenditure by the Canadian newsprint companies of more than \$145,000,000. This is not a static industry.

The Canadian association estimates of maximum U. S. newsprint demand in 1949 at 5,705,000 tons, available supply at 5,425,000, the resulting shortage being 280,000 tons.

### North American Production

According to the annual and very interesting report prepared by the News



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Print Service Bureau of New York (the author this year was again J. J. Zima), the all-time record high output of the North American newsprint mills in 1948 amounted to 5,850,000 tons. The previous peak production in 1947 was exceeded by 205,000 tons or nearly 4%, while the increase over 1946 was 573,000 tons or 11%. Also, in comparison with 1937—the best pre-war year—we find that 906,000 tons or 18% more newsprint was produced than in the earlier 12-month period.

"U. S. producers accounting for 14.8% of the continental total in 1948 recorded a slight increase in proportion of total output in comparison with 1947, while the Canadian and Newfoundland mills representing 78.7% and 6.5%, respectively, showed very small declines from their relative positions in 1947," wrote Mr. Zima.

"Production in Canada in 1948 amounted to 4,601,000 tons and was 154,000 tons or 3½% greater than in the previous rec-

ord year of 1947. Due largely to coming into operation of new facilities and the probably more or less temporary conversion to newsprint of machines usually producing other grades, the 867,000-ton output of United States manufacturers was 42,000 tons or 5% greater than in 1947 and also was above that in any year since 1942. The Newfoundland mills which by the end of the first quarter of 1948 had turned out 12,000 tons less newsprint than in the same period of the preceding year, more than overcame this deficit

#### U. S. Newsprint Supplied to Industry Decreases.

Each circle here represents the total amount of newsprint in the United States available for consumption in that year, with percentages supplied from domestic and foreign sources.



1948—



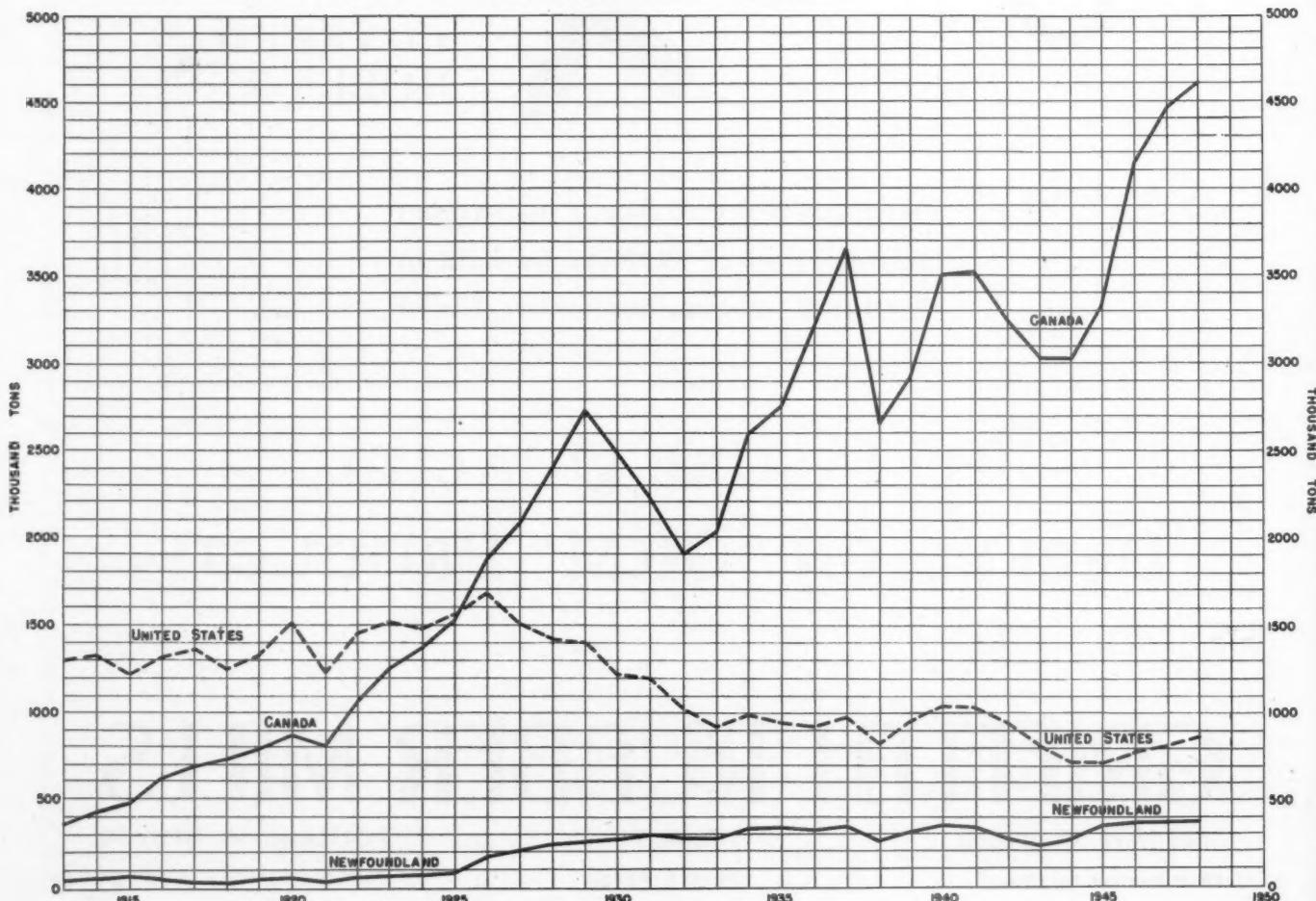
1945—



1915—

#### NEWSPRINT PRODUCTION

UNITED STATES - CANADA - NEWFOUNDLAND



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# NEWS



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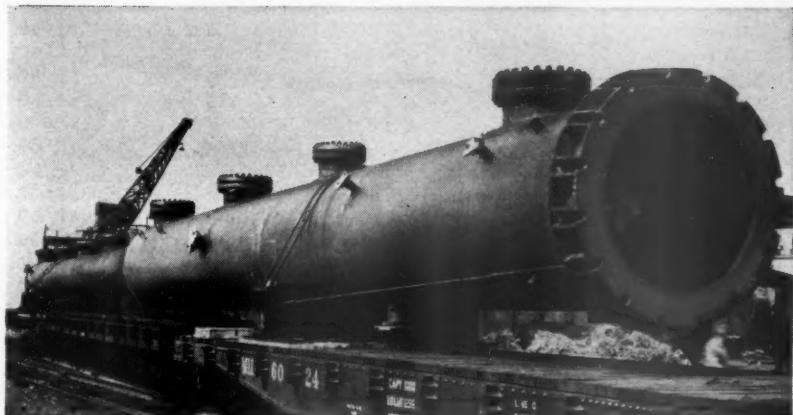
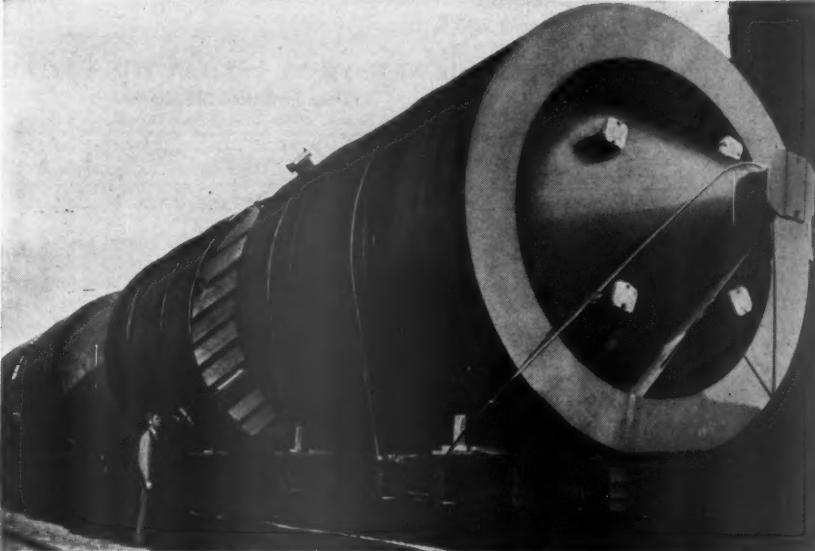
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in the balance of the year, with the result that their output of 382,000 tons was nearly 9,000 tons greater than in 1947 and surpassed all previous records.

"Shipments of newsprint paper from all mills aggregated 5,834,000 tons and were but 16,000 tons less than production. They were, however, 128,000 tons or 2% greater than in 1947 and 567,000 tons more than in 1946. Canadian mills shipped 101,000 tons more in 1948 than in the preceding year, while there was an increase of 34,000 tons in United States shipments and a decrease of 7,000 tons in those made by Newfoundland producers.

"As the result of shipments slightly below the level of production, total manufacturers' stocks on Dec. 31, 1948, amounting to 118,000 tons were 16,000 tons or 16% greater than on the same date a year earlier, but on the other hand were 44,000 tons below the quantity they had at the end of 1946. Practically all of the increase was due to a nearly 10,000-ton rise in Canadian stocks and one of 6,000 tons in Newfoundland while United States mills had only a few hundred tons more than at the end of 1947. Stocks of all manufacturers in aggregate represented about one week's production at last year's rate.

According to official reports from Washington, imports of newsprint paper into the U.S. in 1948 amounted to a record high 4,393,000 tons of which nearly 89% came from Canada, 6% from Europe and 5% from Newfoundland. Imports from Canada and Newfoundland were the largest on record while only in 1939 and 1937 were imports from Europe above those of last year.

"Of the 267,000 tons of newsprint paper which in 1948 came into the U.S. from Europe, 132,000 tons came from Finland, 70,000 tons from Sweden, 28,000 tons each from France and Norway, with the balance coming from half a dozen other countries, says the News Print Service

### NEWSPRINT PRICES

On Jan. 1, 1946, the price of newsprint under OPA was \$67.00 a ton. On Aug. 1, 1948, it had reached \$100 port price, a \$4 raise over the previous increase of \$6 on Jan. 1, 1948. Base zone price is \$101, or \$1 more than port price.

	Pct.	Price	Inc.	Pct.	Price	Inc.
1915	\$41.78	...		1941	\$50.00	nil
1916	51.78	24		1942	50.00	nil
1917	63.78	48		1943	54.66	9
1918	64.30	54		1944	58.00	16
1919	79.40	90		1945	61.00	5
1921	111.45	...		1946	67.00	10
1934	40.00	...		1947	90.00	34
1940	50.00	...		1948	100.00	11

Bureau report, "The quantity imported from Finland was 10% above the target figure for export to this country which Finnish producers had established at the beginning of 1948 and which they hope to improve on in 1949. The increase of 45,000 tons over 1947 in imports from Sweden was unexpectedly large, while tonnage imported from France and Norway also was greater than had been anticipated.

"Altogether, imports represented 84% of the total quantity of newsprint available for consumption in the United States in 1948 as against 74% 10 years earlier.

### Newspaper Records

Editor and Publisher finds that in 1948 U.S. daily and Sunday newspaper circulations hung up new records—for the eighth year hand-running. Total daily sales for 1948 were 52,285,297 copies, a gain of 1.2% over 1947. Sunday sales totaled 46,308,081—2.7% better than the 1947 figure.

As for contention that we have fewer newspapers around the country with each passing year, that simply is not true.

In 1948, the number of daily newspapers increased by 12 over 1947—from 1,769 to 1,781. This was the fifth consecutive year

### SOURCES OF NEWSPRINT USED IN THE UNITED STATES

(Tons in Round Numbers)

Source: News Print Service Bureau

	U. S. Production	U. S. Exports	Imports into the U. S. From	Available for Consumption	
			Canada	Newfoundland	Europe
1913	1,305,000	43,000	219,000	1,000	1,482,000
1914	1,313,000	61,000	310,000	5,000	1,567,000
1915	1,239,000	55,000	367,000	1,000	1,352,000
1916	1,315,000	76,000	468,000	—	1,707,000
1917	1,359,000	94,000	558,000	1,000	1,824,000
1918	1,260,000	97,000	596,000	—	1,759,000
1919	1,375,000	111,000	628,000	3,000	1,895,000
1920	1,512,000	49,000	679,000	1,000	2,193,000
1921	1,225,000	17,000	657,000	—	2,000,000
1922	1,448,000	26,000	896,000	—	2,451,000
1923	1,485,000	16,000	1,109,000	200,000	2,778,000
1924	1,481,000	17,000	1,197,000	4,000	2,821,000
1925	1,530,000	23,000	1,295,000	20,000	2,955,000
1926	1,684,000	19,000	1,658,000	94,000	3,517,000
1927	1,486,000	12,000	1,776,000	89,000	3,461,000
1928	1,418,000	11,000	1,926,000	114,000	3,563,000
1929	1,392,000	19,000	2,195,000	132,000	3,796,000
1930	1,282,000	10,000	1,989,000	156,000	3,351,000
1931	1,157,000	10,000	1,754,000	160,000	3,212,000
1932	1,009,000	8,000	1,533,000	114,000	2,793,000
1933	946,000	11,000	1,545,000	95,000	2,728,000
1934	961,000	23,000	1,956,000	107,000	3,148,000
1935	912,000	23,000	2,062,000	124,000	3,272,000
1936	921,000	15,000	2,422,000	87,000	3,658,000
1937	946,000	17,000	2,899,000	124,000	4,246,000
1938	820,000	6,000	1,938,000	94,000	3,089,000
1939	954,259	13,000	2,206,000	104,600	3,561,859
1940	1,013,000	44,000*	2,586,000	157,000	3,746,000
1941	1,058,000	73,000*	2,762,000	217,000	4,015,000
1942	953,000	42,000**	2,900,000**	120,000**	3,800,000
1943	805,000	35,000**	2,792,000**	110,000**	3,250,000
1944	717,120	40,161**	2,430,000**	100,000**	3,650,000
1945	724,000	18,000	2,534,000	142,000	3,362,000
1946	771,000	8,000	3,272,000	205,000	4,263,000
1947	826,000	8,000	3,675,000	212,000	4,830,000
1948	865,634	28,000	3,917,000	247,000	5,268,634

\*Includes paper which is not standard newsprint. Standard newsprint exports from the U. S. during 1940 did not exceed 15,000 tons; during 1941 the exports did not exceed 25,000 tons.

\*\*Dept. of Commerce figures and includes non-standard newsprint.

# RICE BARTON CORPORATION

## WORCESTER, MASSACHUSETTS

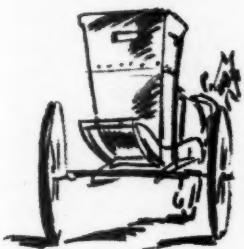
West Coast Representative

RAY SMYTHE

501 Park Building, Portland 5, Oregon

Telephone: Beacon 0502

Engineers and Builders for the Paper Mills for over 100 Years

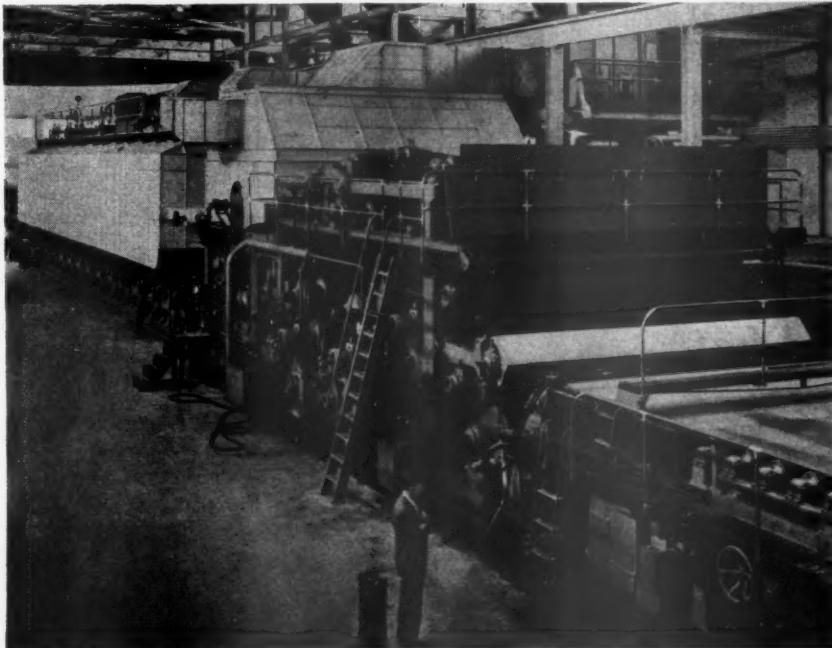


### Do you recall . . .

Oliver Wendell Holmes' story of the "Wonderful One Hoss Shay"? It was built by a deacon who had observed that most carriages broke down in

one part sooner than the other. He vowed that he would build a carriage equally strong in all parts so that nothing would break first. He succeeded so well that the One Hoss Shay lasted one hundred years to the day.

The parallel is that our machines are equally well built in all of their component parts. You can expect long and unusual trouble-free service from a Rice Barton machine—the whole being a well-integrated piece of workmanship like the One Hoss Shay—without any weak part.



Fourdrinier Paper Machines  
Cylinder Paper Machines  
Pulp Drying Machines  
Miniature Paper Machines  
McDonnell Fourdriniers  
Harper Fourdriniers  
Removable Fourdriniers  
Suction Presses  
Dual Presses  
Size Presses  
Smooth Presses  
Open Dryers  
Minton Vacuum Dryers  
Slat Dryers  
Barber Dryers  
Yankee Dryers  
Breaker Stacks  
Calenders  
Pope Reels  
Upright Reels  
Revolving Reels  
Slitters  
Winders  
Hypoid Gear Drives  
Cut Tooth Spur Gears  
Electric Top Press Roll Drives  
Electric Cylinder Mold Drives  
Creping Machines  
Pasting Machines  
Waxing Machines  
Shake Heads  
Suction Box Oscillators  
Suction Box Covers  
Paper Mill Rolls—All Types  
Suction Rolls  
Stone Rolls  
Edwards Attachments  
Paper Passing Devices  
Rubber Marking Devices  
Cooling Rolls  
Cram Drainage Systems  
Cram Siphons  
Steam Joints  
Doctors  
Ziegler Felt Guides  
Lannoye Pulpers  
Agitators for Vertical Chests

in which an increase was registered. Nineteen more Sunday newspapers were published in 1948 than in '47, hiking that total to 530.

Low point in number of U.S. newspapers in recent years came in 1944, because of war difficulties, extreme newsprint shortages, etc. Since 1944, the nation has gained a total of 37 papers.

#### **U. S. Consumption Record**

"A tremendous volume of newspaper advertising lineage—substantially in excess of all previous record—and a further rise in newspaper circulations resulted in the consumption last year of the greatest tonnage of newsprint paper in history. By all accounts, even more would have been used had it been available," said the bureau's report.

"The 422 publishers of 525 newspapers in the United States reporting to the A.N.P.A. used 4,010,000 tons of newsprint in 1948. This was greater by 445,000 tons or nearly 12½% than the hitherto record consumption in 1947 and surpassed that of 1946 by 874,000 tons or 28%.

"On the basis of the currently accepted estimate that in 1948 the A.N.P.A. publishers used 78% of the newsprint consumed in the U.S., the indicated total use of this grade of paper amounted to the all-time high of 5,141,000 tons. This was an increase of 388,000 tons or 8% over

#### **U. S. CONSUMPTION OF NEWSPRINT**

Year—	Population	Newsprint Tons	Paper Used Per Capita
1935	127,521,000	3,300,000	51.7 lbs.
1936	128,429,000	3,650,000	56.8 lbs.
1937	129,257,000	3,830,000	59.3 lbs.
1938	130,215,000	3,458,000	53.1 lbs.
1939	131,878,000	3,550,000	54.1 lbs.
1940	132,817,000	3,730,000	56.2 lbs.
1941	133,923,000	3,930,000	58.7 lbs.
1942	134,633,000	3,800,000	56.4 lbs.
1943	136,497,000	3,650,000	53.5 lbs.
1944	138,101,000	3,250,000	47.1 lbs.
1945	139,621,000	3,480,000	49.8 lbs.
1946	141,229,000	4,296,000	60.8 lbs.
1947	143,382,000	4,753,000	66.3 lbs.
1948	146,116,000	5,141,000	70.4 lbs.

1947. It will be noted that the percentage increase in total consumption was not as great as that of the A.N.P.A. group which indicates that use of newsprint by the small newspapers and other users has not kept pace with that of the larger metropolitan papers. This was a reversal of war-time conditions when the large users were officially ordered to curtail consumption much more drastically than the small consumers."

The 1948 per capita figure of nearly 70½ pounds was 4 pounds above that in 1947

and approximately 8 pounds greater than the pre-war peak of 1929, while the wartime low of 1944 was exceeded by more than 23 pounds or nearly 50%. It has been estimated that per capita use of all kinds of paper and paperboard in the United States in 1948 amounted to approximately 357 pounds of which about 20% was newsprint.

Leading United States newspapers continued to grow in size in 1948 and on the average were substantially larger than in any year since 1929. However, as has

#### **QUALITY-MADE BY WITCO**

to help make better paper products

#### **-LAMINATING ASPHALTS**

Witco Laminating Asphalts are quality-controlled to help form a strong adhesive bond between laminae of paper and other materials—producing an excellent water and moisture vapor barrier.

Other basic Witco materials for the paper industry are listed here. Complete information—and samples of all Witco products are yours for the asking.

YOU KNOW THAT WITCO MAKES HIGHEST QUALITY PRODUCTS

#### **WITCO CHEMICAL COMPANY** MANUFACTURERS AND EXPORTERS

295 MADISON AVENUE, NEW YORK 17, N.Y.

Los Angeles • Boston • Chicago • Detroit • Cleveland • San Francisco • Akron • London and Manchester, England

*Here's an  
old timer...  
but NO TIME today  
for obsolete  
equipment*

*you can meet  
Competitive  
Conditions  
better...  
with the  
im-  
proved*

Catalog upon request.

Patented, and patents applied for in U.S.A.  
and foreign countries.

Manufactured and sold in Canada by  
Alexander Neck United, Ottawa, Ontario.

What part does more uniform quality  
play in your competitive picture? Are you  
sure of accurate stock control? Or are  
you taking a chance . . . letting quality  
slip away, through use of inaccurate,  
obsolete stock control equipment?

Consider these BRAMMER advantages:

- Easily adjustable to any desired consistency.
- Charts a permanent, daily record of incoming and regulated consistencies.
- Controls to within  $\pm 0.10\%$ , or closer.
- Readily adaptable to existing stock systems.

Sales Engineers are available for consultation on your consistency control problems. Your inquiry invited.

**BRAMMER**  
*recording  
consistency  
control*

**PAPER and INDUSTRIAL APPLIANCES, INC.**  
122 EAST 42nd STREET NEW YORK 17, N.Y.

# When Quality NOPCO PAPER CHEMICALS

... for Nopco Paper Chemicals are specifically designed to meet the varied needs of pulp and paper manufacture—to help produce paper that promotes customer satisfaction, repeat business, word-of-mouth recommendation, increased sales.

Nopco Paper Chemicals eliminate many operating difficulties,

cut costs, save time, improve the finished sheet. In addition to items listed here, they include soaps, synthetic resin emulsions, plasticizers and lubricants for use in all phases of manufacture—whether paper, paper board, insulating board, pulping and rag cooking, tissue, or converting. Full information is yours for the asking. Write us today.

## DIGESTER

### NOPCO Nepalcol\*

An additive that helps to reduce cooking time of sulphite pulp.

Pitch Control is initiated here by the addition of a solvent. This solvent aids in keeping liberated pitch in solution so it may be effectively handled later in the system.



Courtesy of Eastern Corp.,  
Banga, Mo.



## WASHERS

### Pitch Control

**NOPCO 1216-V** Used in the Washer, Nopco 1216-V emulsifies the solvent and the pitch in the solvent to reduce the liberated pitch content of sulphite pulp.

### Foam Control

**NOPCO KF (for Sulphite)** With its unique ability to destroy foam, Nopco KF increases the operating efficiency of pulp screening and pulp refining equipment.

**NOPCO 1333-B (for Kraft)** Here is a highly concentrated product that eliminates foam and promotes efficiency in the production of sulphate pulp.



OTHER EFFICIENT NOPCO DEFOAMERS for use in pulping and bleaching operations are: NOPCO KFH, NOPCO KFS, NOPCO 1519, NOPCO Vagifat Y.



## BEATER

### Sizing

**NOPCO 2251-X, NOPCO 2251-B** These anhydrous wax size bases are prepared for easy handling in the mill. Nopco 2251-X requires the addition of water only; Nopco 2251-B, the addition of wax and water. Both yield emulsions stable from infinite dilutions up to 70% solids.

**NOPCO 2252 — Paraffin Wax Size** An efficient sizing agent, giving a consistently uniform size unaffected by water conditions, pumping action or operating temperature. Equally effective in all types of furnishes. Stable in any dilution. Ideal for mills with small requirements or limited mixing facilities.

**NOPCO 2146-R** A high free rosin size emulsion, particularly valuable in hard water areas.

**NOPCO Size I** An efficient waterproofing agent for asbestos paper—and photographic printing papers, where chemical stability of sizing agent is essential.

### Softening

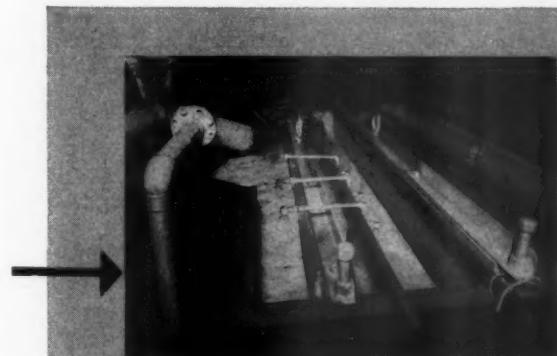
**NOPCO Softener #73** Specifically formulated for use in manufacture of high grade tissue and towelling. Stabilizes the absorbency of the finished sheet and gives unusual softness. The affinity which this cationic softener has for the fibers, permits its addition at the beater or at any convenient point in the stock preparation cycle.



# NOPCO CHEMICAL

Formerly National Oil Products

# does the talking turn Prospects into Buyers



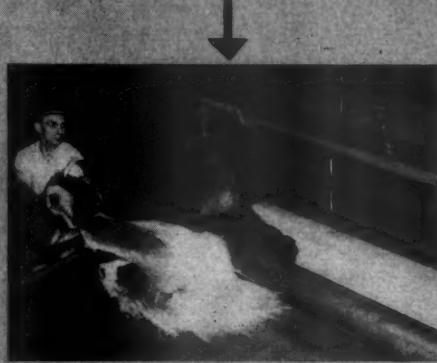
"WET" END OF PAPER MACHINE

## Sheet Formation

**NOPCO KF** Improves sheet formation, even at increased machine speeds, by eliminating foam and faulty fiber dispersion; dissipates entrained air. Outstanding advantages: at least 75% reduction of thin spots, reduced breaks; improved surface characteristics.

## Clean Up

**NOPCO 1216-V** This emulsifier, when used with a solvent, removes asphalt and pitch deposits from metallic surfaces. An excellent medium for cleaning screens, wire and suction rolls.



Courtesy of Whippny Paperboard Co., Whippny, N. J.

## PRESSES

### Felt Washing

**NOPCO Syntergent\* K** A felt washing compound that may be used on or off the machine. Mixes readily with warm or cold water; gives a rich, persistent lather. Dispersible and stable in dilute acid or alkaline mediums. Rinses out freely when washing is complete; leaves felt soft and well napped.



## DRYER SECTION

Courtesy of Black-Clawson Co., Hamilton, Ohio

### Machine Coating

**NOPCO ESI** Improves flow characteristics as well as brightness and gloss. May be used in casein or starch coatings.

### NOPCO 1400-B

#### (Ammonium Stearate)

Functions as a plasticizer, and aids in controlling dusting on the calender rolls.

## MACHINE CALENDER STACK

### NOPCO 2252 — Paraffin Wax

**Size** Besides being used in the Beater, Nopco 2252 may be used as top or surface size in the Size Press or Calender Water Box. Often employed with starch, glue or casein emulsions. Improves printing qualities and increases scuff resistance of paper board.

**NOPCO ESI** Used in conjunction with starch to improve gloss ink printing on folding box board.



## CONVENTIONAL COATING

### NOPCO 1400-B (Ammonium Stearate)

Added to coating color formulations, Nopco 1400-B plasticizes the coating; helps to minimize dusting during super-calendering.

**NOPCO 1600-B** May be used advantageously for all general defoaming and evening requirements. Minimizes fish eyes and similar defects. Works well with colored coatings...



**NOPCO Sulfonated Oils and Fats** Incorporated into the coating mix, these materials impart plasticity, reduce foam, promote evenness of application.

**NOPCO ESI** Flow, brushing characteristics, brightness and gloss of casein and starch coatings are all improved by addition of Nopco ESI. Dusting troubles usually developing on the Super Calender are substantially reduced when Nopco ESI is added to coating color formulations.

**NOPCO 1810-L — Wax Emulsion** An acid stable wax size used to impart plasticity to coating color mixes.

\*Reg. U. S. Pat. Off.

# COMPANY

*Company*

1949 Review Number

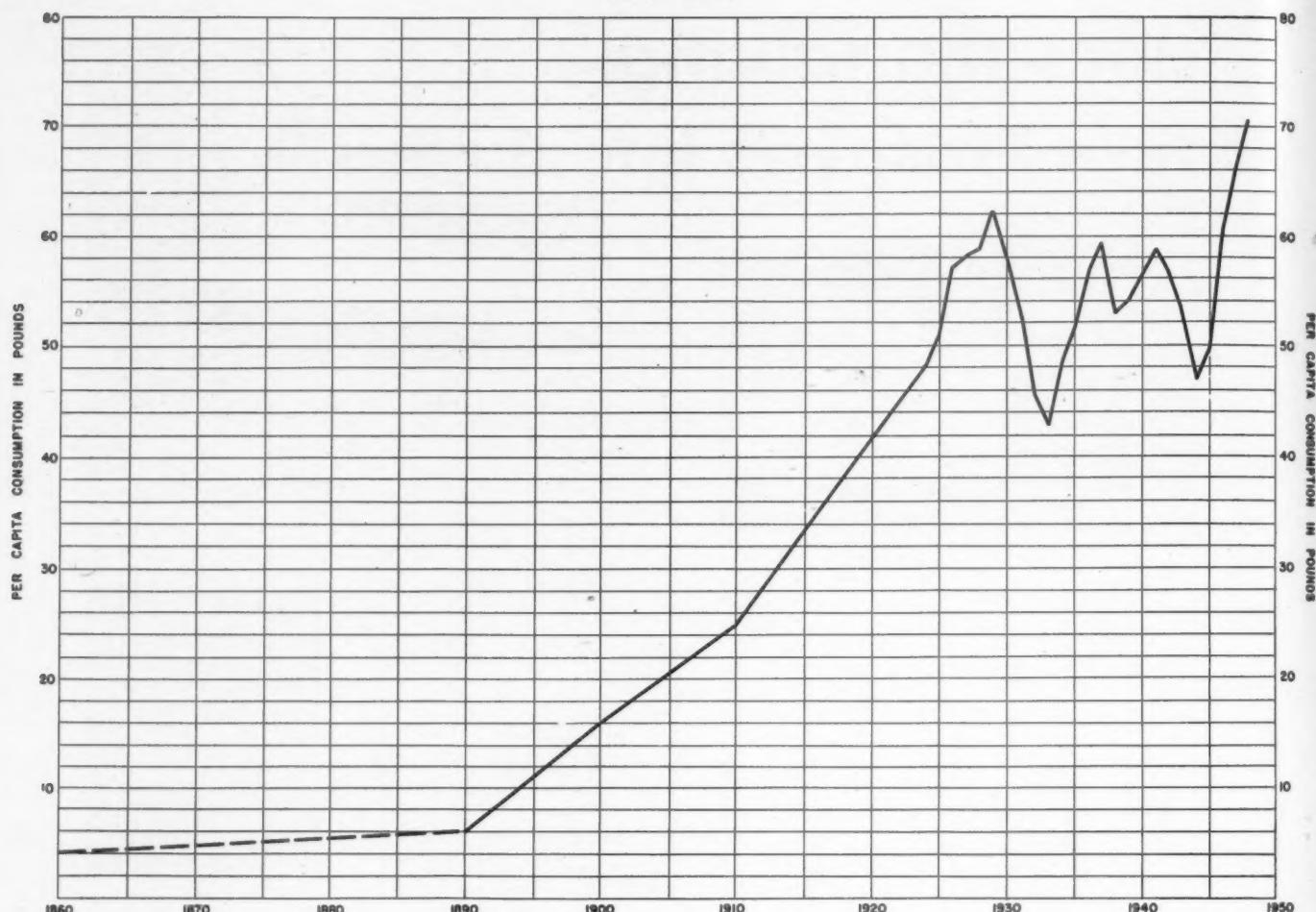
HARRISON, NEW JERSEY

Branches: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CAL.

PULP & PAPER

139

PER CAPITA CONSUMPTION OF NEWSPRINT  
UNITED STATES



been the case since the end of the war, the increase in size was not as great proportionately as the increase in newspaper advertising lineage. It has been reported that currently about 58% of the average newspaper is devoted to advertising and the balance to editorial content compared with the usual pre-war ratio of 40% advertising.

Official reports issued by the Dominion Bureau of Statistics indicate that

in 1948 exports of newsprint paper from Canada amounted to 4,328,000 tons, a gain of 108,000 tons or 2½% over 1947. The value placed on these exports totaled \$383,123,000 which represented 12½% of the total dollar volume of Canadian commodity exports. This was an increase of \$40,830,000 or 12% more than in the preceding year. Both in point of tonnage and value thereof, exports in 1948 were the largest on record.

**NEWSPRINT EXPORTS FROM CANADA**  
(Short Tons)

	U. S. A.	Overseas	Total
1949*	3,950,000	425,000	4,375,000
1948	3,917,366	410,718	4,328,084
1947	3,685,000	545,000	4,219,000
1946	3,355,000	534,000	3,889,000
1945	2,534,000	525,000	3,059,000
1944	2,409,000	391,000	2,800,000
1943	2,545,000	265,000	2,810,000
1942	2,792,000	213,000	3,005,000
1941	2,762,000	500,000	3,262,000
1940	2,586,000	657,000	3,243,000
1939	2,206,000	452,000	2,658,000
1938	1,938,000	486,000	2,424,000
1937	2,899,000	556,000	3,455,000
1936	2,399,000	594,000	2,993,000
1935	2,052,000	523,000	2,575,000

1948 exports to U. S. were valued at \$340,334,045; to other countries \$42,798,698.

\*Estimated

**CANADA'S NO. 1 INDUSTRY**

There are 19 companies in Canada producing newsprint; some large, some small. They operate 36 newsprint mills, ranging in capacity from 10,000 to 250,000 tons a year. About 80% of total capacity is in Ontario and Quebec; about 50% is in Quebec.

Newsprint is Canada's largest manufacturing industry and chief export commodity. The industry is semi-public because 90% of its wood is owned by the public and is used under governmental supervision. This Canadian industry is also one of the world's greatest enterprises. Its present mill capacity of 4,350,000 tons a year is four times the capacity of any other country and is equal to the combined capacities of the United States, Britain, Sweden, Norway and Finland.

**CANADIAN NEWSPRINT CAPACITY AND PRODUCTION**  
*In thousands of short tons.*

	Rated Capacity	Idle Capacity	Operating %
1925	1,715	193	88.8
1930	3,600	1,096	69.6
1932	3,840	1,926	49.9
1935	3,914	1,163	70.3
1937	3,883	235	93.9
1940	4,368	949	78.3
1943	4,315	1,332	69.1
1945	4,301	1,042	75.8
1946	4,279	136	96.8
1947	4,350	nil	101.1
1948	4,478	nil	102.2
1949*	4,600	nil	101.6
1950*	4,650	nil	100.0

Source: Newsprint Association of Canada; 1949-1950 NAC estimates from company reports.

PER CAPITA CONSUMPTION IN POUNDS

80
70
60
50
40
30
20
10
0



Laboratory illustration of good water treatment . . . and bad. Test rods, in same water, same temperature and circulation conditions, but only one with Nalco treatment added (left), show the improvement you can expect with The Nalco System.

— Nalco Laboratories Photo

Nalco

#### SERVICES AND PRODUCTS

- A Nalco SURVEY provides a complete water treatment picture, with recommendations if necessary.
- LABORATORY RESEARCH keeps modern chemicals and water treatment methods at work for you.
- PRODUCTS recommended by Nalco are designed to deliver full water treating value, in the forms best suited to your plant requirements.
- PLANT SERVICE by thoroughly experienced water treatment engineers...Keeps The Nalco System up-to-the-minute in your plant.
- TEST EQUIPMENT furnished by Nalco makes routine tests and control procedure fast and accurate.
- THE NEW NALCO SR SERIES OF PRODUCTS alleviate fire side deposits.

## Let's go back to FUNDAMENTALS

### WHAT IS GOOD WATER TREATMENT?

WE CAN all agree that *good* water treatment should provide clean pipe lines from the raw water intake through all equipment and including condensate return lines. It should provide clean valves, cooling systems, turbines, and boiler and processing equipment free from scale, corrosion, slime and algae. Boilers should be maintained free from foam so that steam can be produced in a satisfactorily dry condition with blowdown kept at a minimum. Such a condition should be maintained on a permanent basis with a *good* system of water treatment.

This, briefly, is the Nalco idea of *good* water treatment. It is the kind of water treatment that is possible and has proven economical in thousands of plants now using The Nalco System.

For your own satisfaction, and at no obligation whatever, ask to have a Nalco field representative survey your plant so that you may decide for yourself the benefits The Nalco System has to offer.

NATIONAL ALUMINATE CORPORATION  
6213 West 66th Place • Chicago 38, Illinois  
Canadian inquiries should be addressed to  
Alchem, Limited, Burlington, Ontario

THE

Nalco

SYSTEM • Serving Industry through Practical Applied Science



## INDUSTRY 'HEALTH' IS GOOD

# Stocks Compare Well

### COMPARATIVE OPERATING RESULTS AND PER SHARE STATISTICS

(Sales, Profits and Income in Thousands of Dollars)

	Net Sales	*Pre-Tax Profits	*Net Income	#Earned	Per Common Share oPrice	Range
<b>b-American Writing Paper Co. (Dec. 31):</b>						
1939	\$ 6,784	\$ 286	\$ 239	\$0.67	Nil	2½-1½
1941	8,713	195	137	0.32	Nil	3½-2½
1943	9,355	821	245	0.65	Nil	5½-2½
1944	9,122	568	184	0.51	Nil	7½-4½
1945	9,211	308	151	0.42	Nil	11½-5½
1946	11,397	586	306	0.85	Nil	12½-7½
1947	13,326	992	574	1.61	0.25	10½-7½
1948	10,822	d50	d50	d0.15	Nil	9 -5
<b>b-Brown Co. (Nov. 30):</b>						
1941	32,198	5,177	3,727	c25.79	cNil	c31½-25
1943	30,998	2,501	1,126	c 7.80	cNil	c36 -28½
1944	32,329	2,513	1,298	c 8.99	cNil	c44½-28½
1945	33,284	2,143	1,220	c 8.44	cNil	c83 -45
1946	36,087	2,557	1,594	c11.03	cNil	c104 -67½
1947	42,630	4,813	2,838	c19.64	cNil	c113 -67½
1948	48,070	6,236	3,936	c27.31	cNil	c104½-72
<b>Champion Paper &amp; Fibre Co. (a-April 30):</b>						
1937	22,415	1,851	1,557	0.99	1.12½	31½-12½
1939	23,406	1,638	1,330	1.12	0.05	15 -8½
1941	42,258	7,833	3,130	2.36	0.50	11½-7½
1943	46,249	7,099	1,971	1.29	0.50	12 -9
1944	48,485	6,874	1,804	1.02	0.50	15½-11½
1945	49,218	4,534	2,057	1.24	0.62½	27½-14½
1946	67,611	9,903	5,376	4.47	1.00	34½-21½
1947	86,736	13,612	6,590	5.57	1.25	27 -19½
1948	j60,219	N.A.	j6,180	j5.34	2.00	26½-17½
<b>Columbia River Paper Mills (Dec. 31):</b>						
1939	N.A.	N.A.	d53	d3.44	N.A.	N.A.
1941	N.A.	510	340	16.67	N.A.	N.A.
1943	N.A.	141	91	4.24	N.A.	N.A.
1944	N.A.	280	155	7.77	N.A.	N.A.
1945	N.A.	407	170	8.49	N.A.	N.A.
1946	N.A.	1,407	877	43.83	N.A.	N.A.
1947	N.A.	3,954	2,737	136.85	N.A.	N.A.
1948	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Consolidated Paper Co. (Dec. 31):</b>						
1939	9,786	1,136	933	1.24	1.00	17 -13
1941	15,367	2,905	1,449	1.93	1.25	16½-15
1943	17,976	3,106	1,222	1.63	1.00	15½-12
1944	18,323	2,796	1,072	1.43	1.50	17½-14½
1945	17,773	1,640	921	1.23	1.00	23 -18
1946	23,296	2,613	1,552	2.07	1.25	23 -17½
1947	31,429	5,551	3,416	4.55	2.00	23 -19
1948	30,993	4,401	2,732	3.64	2.00	23 -20½
<b>Container Corp. of America (Dec. 31):</b>						
1937	25,268	2,312	1,784	2.28	1.20	37½-10½
1939	24,115	1,742	1,449	1.85	0.23	17½ -9½
1941	46,714	6,742	2,327	2.98	1.50	16½-11
1943	61,164	10,384	2,684	3.70	1.50	23½-16
1944	69,641	10,513	2,663	3.41	1.50	29½-20
1945	74,138	9,016	2,326	2.97	1.50	40½-26½
1946	91,090	13,136	7,765	7.84	3.40	54½-35½
1947	128,346	16,974	10,274	10.09	4.50	48 -32½
1948	131,956	16,991	10,425	10.12	4.50	42½-33½

BECAUSE of current changes in the industry and the long awaited meeting of supply and demand, the 1948 operating results and per-share statistics shown in these pages must, in all probability, be regarded as recent history.

The exact location of the production floor was still a matter of conjecture as this North American Review Number went to press, but the best informed sources seemed to feel that 1949 consumption would be close to 21,000,000 tons and the first quarter figures were bearing out this prediction. If consumption is 21,000,000 tons, the ratio of production to mill capacity would be even a little higher than it appeared early this year.

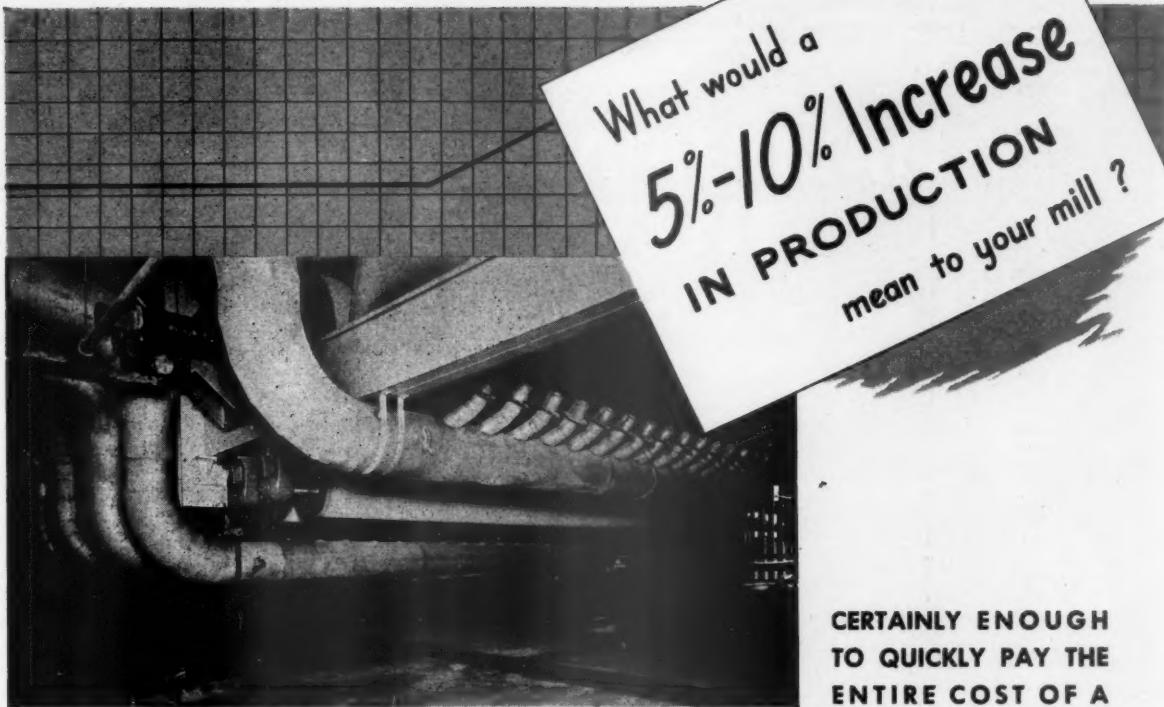
Since just before election, pulp and paper stocks as a class were not suffering too greatly in comparison with other industries or even with the average. Just prior to Nov. 4, a dependable financial house was reporting pulp and paper securities as 17.9% in the Dow Jones average. On Feb. 2 of this year the figure was 16.5%, and it was again 16.5% a month later on March 2, indicating a definite settling under a process which had begun at least twelve months previously.

Reductions in production came as no surprise to industry leaders this time. They were, in fact, freely predicted in almost all of the 1948 annual reports of individual companies and such reports were being prepared very early in the year and in some instances late in 1948. Production and consumption reductions were being predicted also during Paper Week in New York City wherever industry leaders gathered together.

By the end of the first quarter of this year pulp prices had shown signs of reaching their correction point (see page 28, March issue: *An Industry Report on the Pulp Situation*) and there were signs of leveling off in the paper field as well. Paper prices had broken in the first quarter, but nevertheless there was no great rush to meet the lowest competitive price on the market. And prices still had far to go before they reached pre-war levels or even the OPA figures of the war years. As this issue went to press there was no general indication that they were going there, although some further price breaks were definitely in the cards.

While here and there in the industry there was indication of the fright which was lamented in February by D. Clark Everest, president of Marathon Corp., it was equally evident that the industry felt much better psychologically in April than it had in January.

Early this year, a credit move was made by the Federal Reserve Board which was calculated to improve the activity of all securities, and hence improvement of activity in pulp and paper stocks could be expected if the purpose of the move was fulfilled. This was the



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International Paper Co.  
Macon Kraft Co.  
Michigan Carton Co.  
Oxford Paper Co.  
Pacific Paper Board Co.  
Robert Gair Co., Inc.  
Scott Paper Co.  
Sonoco Products Co.  
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**COMPARATIVE OPERATING RESULTS AND PER SHARE STATISTICS (Continued)**

(Sales, Profits and Income in Thousands of Dollars)

	Net Sales	*Pre-Tax Profits	*Net Income	↑ Per Common Share		
				#Earned Dividends	oPrice Range	
<b>Crown Zellerbach Corp. (a-April 30):</b>						
1937	49,891	7,488	6,211	1.58	0.25	25 1/4- 8 1/2
1939	56,527	10,324	8,119	2.42	0.50	17 1/2- 9
1941	86,336	20,103	11,109	3.74	1.00	15 1/2-10
1943	97,834	15,432	7,603	2.19	1.00	17 -11 1/2
1944	98,814	13,700	7,093	1.97	1.00	22 1/2-15 1/2
1945	102,075	13,517	7,825	2.37	1.00	30 1/2-20 1/2
1946	127,796	25,059	15,053	5.22	1.10	40 1/2-25
1947	153,396	31,271	19,615	6.81	1.70	34 1/2-25
m 1948	129,673	26,034	16,446	5.32	2.00	34 1/2-23 1/2
<b>Eddy Paper Corp. (Dec. 31):</b>						
1937	9,694	785	650	3.65	3.00	41 1/4-18 1/2
1939	8,578	394	328	1.77	0.50	19 1/4-14 1/2
1941	14,972	2,233	833	4.50	2.00	21 -13 1/2
1943	14,369	3,008	768	4.68	3.50	28 1/2-22
1944	16,020	3,924	1,059	6.44	4.50	38 -25
1945	16,534	3,493	848	5.16	4.50	52 -39
1946	19,582	4,765	2,925	17.78	13.00	111 -48 1/2
1947	28,468	9,333	5,768	35.06	15.00	113 -81
1948	27,318	7,113	4,388	26.51	12.00	110 -82
<b>Gair (Robert) Co., Inc. (Dec. 31):</b>						
1937	21,655	794	557	**	Nil	**
1939	14,735	d624	d634	**	Nil	**
1941	23,393	2,465	1,127	0.80	0.25	2 1/4- 1 1/4
1943	26,576	3,146	969	0.66	0.30	4 1/2- 1 1/2
1944	27,640	2,766	761	0.48	0.30	5 1/4- 2 1/2
1945	28,093	2,209	715	0.33	0.30	10 1/2- 4 1/2
1946	33,697	3,749	2,296	1.12	g	11 1/2- 7
1947	44,837	8,639	5,023	2.63	0.35	10 1/2- 5 1/2
1948	45,801	6,847	4,266	2.19	0.70	10 1/4- 6 1/2
<b>Gaylord Container Corp. (Dec. 31):</b>						
1937	13,480	2,307	1,765	0.92	0.25	N.A.
1939	13,660	809	662	0.24	0.23 1/2	6 1/4- 3 1/2
1941	25,281	3,970	1,749	0.91	0.33 1/2	4 1/2- 2 1/2
1943	31,708	3,153	1,243	0.61	0.33 1/2	4 1/2- 3 1/2
1944	33,945	3,851	1,287	0.63	0.33 1/2	7 1/2- 4 1/2
1945	35,615	2,855	1,105	0.51	0.33 1/2	13 1/2- 7 1/2
1946	44,284	8,281	5,046	2.43	0.83 1/2	25 -11 1/2
1947	57,271	15,659	9,529	4.06	1.66 1/2	23 1/2-14 1/2
1948	60,337	13,065	8,015	3.43	1.50	26 1/2-16 1/2
<b>Great Northern Paper Co. (Dec. 31):</b>						
1937	N.A.	2,577	2,178	2.18	2.00	47 -27
1939	N.A.	3,296	2,727	2.73	2.40	45 -33
1941	N.A.	3,815	2,432	2.44	2.50	42 -29 1/2
1943	N.A.	3,097	1,860	1.86	1.60	36 -27 1/2
1944	N.A.	2,775	1,667	1.67	1.60	37 1/2-35 1/2
1945	N.A.	1,529	903	0.90	1.60	47 1/2-35 1/2
1946	N.A.	3,949	2,364	2.37	1.60	46 1/2-39 1/2
1947	N.A.	6,885	4,103	4.11	2.40	47 1/4-39 1/2
1948	N.A.	7,467	4,621	4.63	2.80	44 1/2-36 1/2
<b>Hammermill Paper Co. (Dec. 31):</b>						
1937	7,443	580	450	0.63	1.50	N. A.
1939	7,330	623	463	0.92	0.25	14 1/4- 9
1941	10,703	1,351	671	1.56	0.62 1/2	12 1/2- 7 1/2
1943	11,424	1,663	585	1.32	0.50	12 1/2- 8 1/2
1944	12,570	1,591	454	0.96	0.50	14 1/2- 9 1/2
1945	11,856	1,087	528	1.18	0.50	21 1/4-13 1/2
1946	14,107	1,615	940	2.16	0.50	26 3/4-14
1947	17,645	2,518	1,468	3.64	0.50	20 1/4-14
1948	20,696	2,322	1,402	3.45	0.81 1/4	23 1/2-15
<b>Hinde &amp; Dauch Paper Co. (Dec. 31):</b>						
1937	15,827	1,778	1,428	3.61	2.00	37 -16 1/2
1939	13,845	1,091	912	2.04	1.00	19 -14 1/2
1941	22,490	3,346	1,446	3.42	1.50	16 1/2-12 1/2
1943	24,848	3,574	1,197	2.83	1.50	21 1/2-14 1/2
1944	24,357	3,368	1,148	2.69	1.50	25 1/2-19 1/2
1945	24,054	2,749	999	2.01	1.00	33 3/4-25
1946	22,946	2,850	1,750	3.67	2.00	43 -26
1947	35,034	5,509	2,409	5.06	3.50	33 -26
1948	35,767	6,362	3,992	8.38	3.00	37 -28
<b>International Paper Co. (Dec. 31):</b>						
1937	123,487	11,780	9,135	2.47	Nil	19 1/4- 6 1/4
1939	122,290	5,709	4,894	0.14	Nil	14 1/4- 6 1/4
1941	214,334	43,751	16,254	6.37	Nil	20 -10 1/2
1943	216,123	32,451	10,120	3.01	Nil	14 1/4- 8 1/4
1944	231,572	35,833	10,560	3.26	Nil	21 1/2-13 1/2
1945	234,246	28,923	10,977	3.40	Nil	48 1/4-19 1/2
1946	287,868	56,396	31,179	7.99	3.00	55 1/2-38 1/2
1947	405,248	100,075	54,397	15.02	4.00	59 1/2-38 1/2
1948	458,803	102,301	60,489	16.73	5.00	64 1/2-42 1/2

dropping of margin requirements from 75 to 50%. Emil Schram, president of the New York Stock Exchange, believed that it was a constructive move and commended the Board for its action.

#### Culling the Annual Reports

The attitude of industry leaders was explicit in almost all the annual reports. For example, said Fred G. Stevenot, president of Puget Sound Pulp & Timber Co., of Bellingham, Wash.: "Now that a settling down process is going on, industry-wide and nation-wide stockholders should not expect the earnings of 1949 to equal those of 1948. They may, however, anticipate satisfactory earnings by any normal standard of comparison." In those words, Mr. Stevenot seems to have crystallized the true position of the industry as a whole. *Satisfactory earnings may be expected by any normal standard of comparison.*

Of course, 1947 and 1948 were historically profitable for the Bellingham mill. It derived a net income of \$5,513,626 from manufacturing operations and other sources in 1948, in comparison with \$4,822,906 in 1947. Stated on the basis of present capitalization, these returns were equal to \$7.09 a share in 1948, against \$6.15 a share in 1947. They were derived from net sales of \$19,009,331, other income of \$331,318, and capital gain of \$174,957 in 1948; net sales of \$15,173,453, other income of \$383,975, and capital gain of \$174,957 in 1947.

In commenting on the company's total tax bill—amounting to \$3,678,000 in 1948 against \$3,183,000 in 1947—Mr. Stevenot reduced the 1948 total to small, easily comprehended figures by pointing out that for every \$1 of net sales the company put up 19 cents for taxes; every \$1 of cost of doing business included 36 cents for taxes, and whereas stockholders' dividends amounted to \$2.75 a share, tax provisions topped this with \$4.73 a share.

#### Rayonier's Report

Interesting in the dissolving pulp field was the improvement shown in 1948 by Rayonier, Incorporated. Sales amounted to \$63,411,202 for 1948 compared with \$49,964,041 in 1947. Net income after all charges, including Federal income taxes of \$7,070,000, amounted to \$10,287,045 for 1948, as compared with \$8,505,916 for 1947. After payment of Preferred Dividends, this represented \$9.09 per share on the Common Stock for 1948 as compared with \$7.30 per share for the previous year.

Regular dividends were paid on the common stock during 1948, and in the fourth quarter the stock was put on a \$2 annual basis by payment of fifty cents per share. President Edward Bartsch states that a substantial share of 1948 earnings were retained in the business to provide for replacement and improvement of plant equipment. The consolidated balance sheet as of Dec. 31, 1948, shows current assets of \$22,022,249 and current liabilities of \$6,513,799, a ratio of 3.38.

The entrance of Celanese Corp. of America into the pulp producing field with a new mill in British Columbia makes its earnings of interest in these pages. Sales for 1948 amounted to \$230,384,672 as compared with \$181,083,608 for 1947 and this increase of roughly 27% reveals clearly the reasons for Celanese's entrance into the pulp industry on its own. Earnings per share of common stock amounted to \$6.61 compared with \$3.83 for 1947, after providing for the preferred stock dividends. In ten years Celanese sales volume has grown from \$35,000,000 to the figure quoted above. Said Harold Blanck, president:

#### H. & W. Co.'s Record

Hollingsworth & Whitney Co. of Maine and Alabama, report consolidated net profit of \$3,570,355 for 1948, after all charges including provision for federal taxes on income. After deducting preferred dividends,

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installed or contracted for by Pulp & Paper Mills  
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this profit amounted to \$8.78 per share on the 388,490 outstanding shares.

These results compare with consolidated net profit of \$1,905,788 in 1947, equal after preferred dividends, to \$4.48 per share on the same number of shares then outstanding. The figure for 1948 is after provision of \$115,000 for non-recurring retirement plan costs and that for 1947 was after deduction of \$1,453,627 for this purpose. James L. Madden, president of the company observed that: "During 1948, expenditures for improvements in and additions to manufacturing facilities were \$3,515,310 and additions to woodlands totalled \$86,489. Taking into consideration assets sold, principally timberlands, the net addition to gross fixed assets was \$2,902,091. At the end of the year, the unfinished portion of the company's construction program previously authorized amounted to approximately \$4,600,000."

Mr. Madden also renewed commitment on plans for further expansion of southern mills to be financed through the forthcoming sale of \$8,500,000 of 20-year debentures and 61,510 shares of common stock, together with other shares of the company.

For the fifth year in succession St. Regis Paper Co. increased its sales over the preceding year. Net sales in 1948 were \$162,672,926 as compared with \$143,864,583 while the net income for 1948 stood at \$14,859,803 as compared with \$14,631,325 in 1947. Net income per common share was \$2.71 compared with \$2.66 in the previous year. The net profit per share of common stock has risen in St. Regis from 38 cents in 1943. St. Regis again consolidated position with the start-up of the new kraft paper mill at Tacoma which ties in with the already existing sulfate pulp mill at that site.

In commenting on the general situation, President Roy K. Ferguson stated that the expansion program was drawing to a close, and it was apparent that the time schedule had been well programmed because "during the year St. Regis entered a period of more competitive business conditions... The management regards this as a healthy sign... Development of St. Regis along lines of its growth has built profit-producing ability and tended to reduce the risk of feast or famine periods in its business." Mr. Ferguson's stated purpose is of interest because it is an example of the great change in thinking that has taken place in the industry on top levels in the past two decades.

How pulp and paper stabilizes and fills out the hand of a great wood-using organization is illustrated by the statement of Robert G. Fairburn, president of The Diamond Match Co., of which the B-F-D Co. is a subsidiary. Said Mr. Fairburn:

"In the lumber division, integration from forests through to the retail consumer makes Diamond's lumber business more stable than that of many competitors.

Paper and pulp products account for about 15% of Diamond's sales at this time. The annual report indicated expenditures of as much as \$5,000,000 in 1949, and about \$2,000,000 of this has already been used for the purchase of land and lumber cutting rights. Capital additions in other divisions of the company may require an additional \$3,000,000. In 1948 net sales were highest in the company's history—\$78,537,401 an increase of 16% over 1947. Net income was the equivalent of \$2.62 per common share, after dividends of \$2.00 per share on the preferred stock, compared with \$2.63 in 1947.

#### **Scott Paper Co. Sales Higher**

Raymond C. Mateer, executive vice-president of The Scott Paper Co., Chester Pa., saw no serious drop in demand for Scott toilet tissue, towels, facial tissue, and wax grades although it is conceded that supply has generally caught up or exceeded demand in these types of papers generally. He stated that in the first quarter of this year net sales were running at a higher rate than in the record year of 1948 when net sales totaled \$73,597,062 as compared with \$57,252,636 in 1947, allowing \$4.15 per common share as compared with \$3.02 in 1947.

Speaking of fine papers, Mr. Thomas H. Blodgett,

#### **COMPARATIVE OPERATING RESULTS AND PER SHARE STATISTICS (Continued)**

(Sales, Profits and Income in Thousands of Dollars)

	Net Sales	*Pre-Tax Profits	Net Income	†Earned oDividends	Per Common Share oPrice Range
<b>Kimberly-Clark Corp. (Dec. 31):</b>					
1937	27,250	3,124	2,360	1.81	1.00 23 1/2 - 8 1/2
1939	27,861	3,561	2,651	2.11	0.87 1/2 19 - 10
1941	36,959	5,818	3,104	2.57	1.12 1/2 19 - 12 1/2
1943	57,488	6,694	2,550	2.00	0.87 1/2 17 - 12 1/2
1944	61,331	6,125	2,422	1.55	1.00 21 - 15 1/4
1945	56,882	4,557	2,447	1.66	1.00 13 1/2 - 19 1/4
1946	66,377	6,830	4,265	3.15	1.00 35 - 21 1/4
1947	91,010	11,496	7,172	4.29	1.30 27 1/2 - 21 1/4
1948	117,575	14,228	8,271	5.02	1.65 24 - 19
<b>Marathon Corp. (Oct. 31):</b>					
1937	N.A.	1,087	857	n1.02	e0.75 22 - 8 1/2
1939	13,298	724	592	n0.93	0.25 11 1/2 - 8 1/2
1941	18,081	2,012	1,205	n1.59	0.37 1/2 8 1/2 - 6
1943	25,381	3,008	1,286	n1.49	0.50 10 1/2 - 8 1/2
1944	29,856	5,979	1,603	1.88	0.50 16 - 13 1/2
1945	31,941	5,602	1,360	1.39	0.50 29 1/2 - 16
1946	33,244	5,019	2,734	1.91	0.77 1/2 36 1/2 - 22 1/2
1947	44,604	8,030	4,654	3.39	1.00 27 1/2 - 19 1/2
1948	56,767	9,045	5,593	4.11	1.20 25 1/4 - 18 1/2
<b>Mead Corporation (Dec. 31):</b>					
1937	25,373	2,278	1,841	2.40	1.50 34 1/4 - 10
1939	21,987	915	744	0.46	Nil 14 1/2 - 6
1941	32,452	3,761	2,110	2.66	0.75 9 1/2 - 5
1943	36,878	3,031	1,078	0.89	0.60 10 1/4 - 6
1944	39,920	3,292	1,138	0.98	0.60 13 - 8
1945	40,857	2,636	1,191	1.06	0.70 25 - 12 1/2
1946	53,429	5,607	3,449	4.22	1.15 30 1/2 - 18 1/2
1947	72,273	9,356	5,658	7.33	1.55 23 1/2 - 16 1/2
1948	84,837	8,606	r3,664	r4.64	2.00 23 1/2 - 15
<b>National Container Corp. (Dec. 31):</b>					
1937	3,065	357	312	0.16	0.08 1/2 4 1/2 - 2 1/2
1939	4,864	434	358	0.18	0.06 1/2 3 1/2 - 1 1/2
1941	9,207	2,729	1,073	0.54	0.20 4 1/4 - 2 1/2
1943	12,969	3,191	817	0.41	0.16 1/2 4 1/2 - 3 1/2
1944	17,656	4,474	1,191	0.60	0.30 4 1/2 - 3 1/2
1945	18,767	4,112	1,186	0.56	0.28 10 1/2 - 4 1/4
1946	28,776	9,063	5,606	2.27	\$0.41 1/2 12 1/2 - 8 1/2
1947	43,347	17,468	10,913	4.13	1.10 15 1/2 - 10 1/2
1948	38,699	9,923	6,185	2.28	1.20 13 1/2 - 9 1/2
<b>Oxford Paper Co. (Dec. 31):</b>					
1939	N.A.	825	674	0.42	Nil 8 1/4 - 2
1941	N.A.	1,996	1,057	1.44	Nil 6 1/2 - 3 1/2
1943	N.A.	2,169	914	1.07	Nil 3 1/2 - 1 1/2
1944	N.A.	2,216	1,024	1.36	Nil 8 1/4 - 3 1/2
1945	N.A.	2,104	974	1.23	Nil 15 - 8 1/2
1946	N.A.	3,043	1,843	3.51	Nil 18 - 9
1947	N.A.	4,958	2,991	6.52	0.30 16 1/4 - 10
1948	N.A.	3,032	1,855	3.54	0.80 15 1/2 - 7 1/2
<b>Minnesota &amp; Ontario Paper Co. (Dec. 31):</b>					
1941	22,029	3,422	2,628	1.96	Nil 4 1/4 - 2 1/2
1943	23,677	2,464	1,464	1.09	Nil 9 1/2 - 3 1/2
1944	23,770	2,043	1,125	0.84	Nil 12 - 7 1/2
1945	24,480	2,414	1,549	1.15	Nil 19 1/2 - 11 1/2
1946	29,464	3,953	2,190	1.69	Nil 27 1/4 - 16
1947	48,997	10,670	6,157	4.77	1.00 24 1/2 - 15 1/2
1948	52,559	10,029	6,166	4.80	2.00 25 1/2 - 18 1/2
<b>Puget Sound Pulp &amp; Timber Co. (Dec. 31):</b>					
1937	3,043	311	255	0.36	0.37 1/2 9 1/2 - 3 1/2
1939	3,028	116	99	d0.10	Nil 6 1/2 - 1 1/4
1941	8,379	3,123	1,076	1.54	1.00 9 1/2 - 7
1943	6,373	1,057	457	0.59	0.25 6 1/2 - 3 1/2
1944	6,469	h1,413	h938	h1.33	0.50 8 1/2 - 5 1/2
1945	6,217	h1,035	h603	h0.82	0.50 12 1/2 - 7 1/2
1946	7,188	2,130	1,321	1.92	0.50 13 1/2 - 9
1947	15,173	7,699	4,823	6.16	1.50 22 1/2 - 12 1/2
1948	19,009	8,807	5,514	7.09	2.75 29 1/2 - 18 1/2
<b>Rayonier Incorporated (a-April 30, 1937-45; Dec. 31 thereafter):</b>					
1937	17,496	3,746	3,125	1.94	N.A. N.A.
1939	16,292	2,887	2,389	1.18	Nil 19 - 6 1/2
1941	31,317	9,080	3,570	2.40	0.75 18 1/2 - 8 1/2
1943	22,824	2,489	1,689	0.45	0.87 1/2 15 1/2 - 11 1/2
1944	25,970	3,624	1,839	0.61	Nil 18 - 12 1/2
1945	27,033	2,075	1,503	0.26	Nil 25 - 16
1946	t24,312	t4,065	t2,501	t1.68	Nil 33 - 17 1/2
1947	49,964	13,831	8,306	7.30	0.50 32 - 17 1/2
1948	63,411	17,357	10,287	9.09	1.25 36 - 22 1/2
<b>St. Regis Paper Co. (Dec. 31):</b>					
1937	14,869	1,599	1,228	0.22	Nil 11 1/2 - 2 1/2
1939	15,359	705	548	0.06	Nil 4 1/2 - 1 1/2
1941	30,000	5,247	3,228	0.71	Nil 2 1/2 - 1 1/2
1943	25,528	2,910	1,856	0.38	Nii 4 1/2 - 1 1/2
1944	48,388	3,398	1,854	0.36	Nil 6 1/2 - 4 1/2
1945	52,501	4,344	2,211	0.94	Nil 12 - 5 1/2
1946	82,782	9,349	5,564	1.00	Nil 15 1/2 - 8 1/2
1947	143,865	23,956	14,631	2.66	0.25 12 - 9
1948	162,673	23,903	14,860	2.71	0.80 13 1/2 - 8

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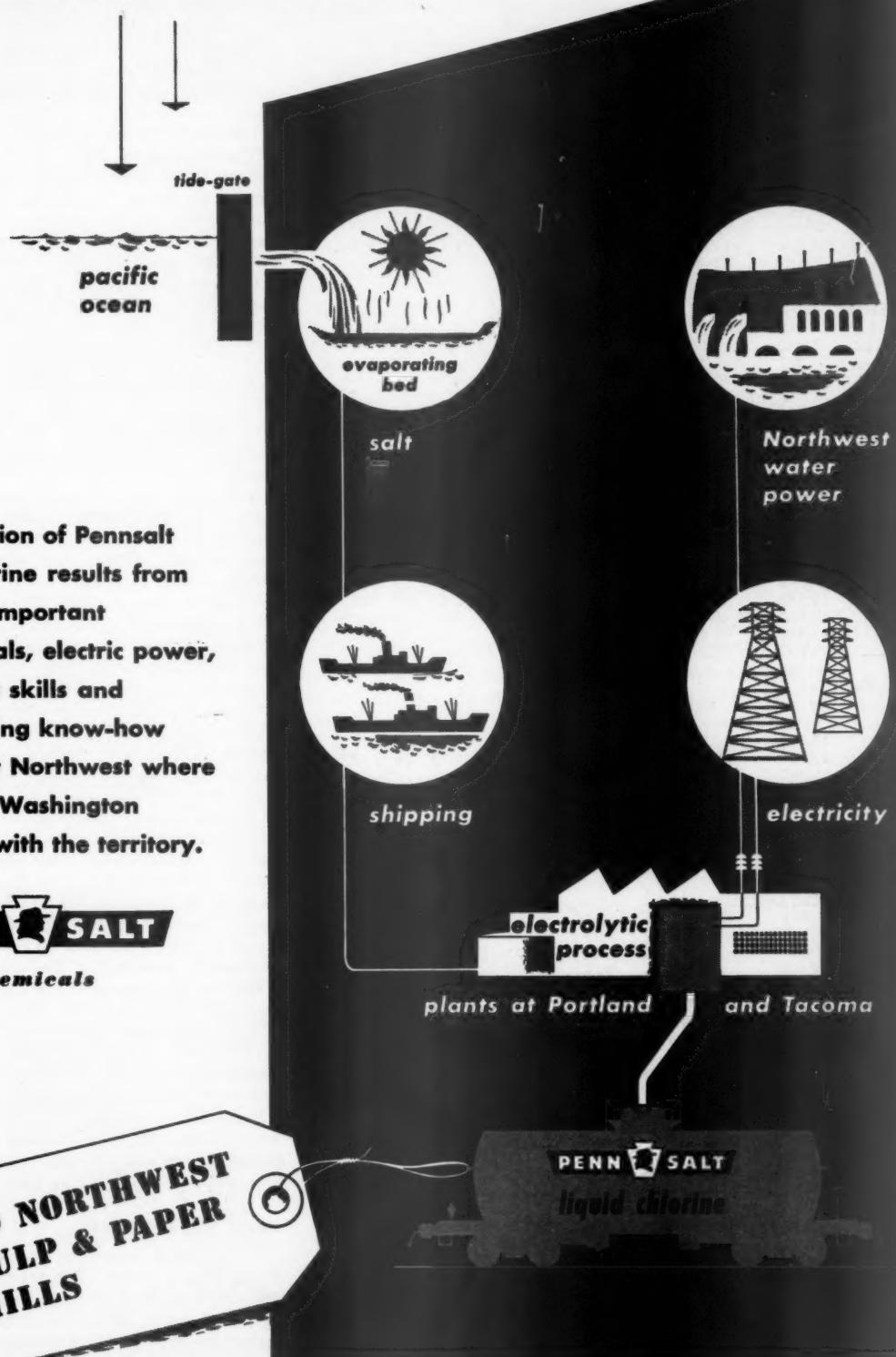
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## Evolution of a Northwest Product



**COMPARATIVE OPERATING RESULTS AND PER SHARE STATISTICS (Continued)**  
 (Sales, Profits and Income in Thousands of Dollars)

	Net Sales	*Pre-Tax Profits	Net Income	↑ Per Common Share oPrice #Earned oDividends Range		
<b>Scott Paper Co. (Dec. 31):</b>						
1937	13,844	1,603	1,249	2.19	1.55	45 1/4-34 1/2
1939	18,517	2,512	1,886	2.65	1.85	52 1/8-44 1/2
1941	27,076	3,277	1,940	2.52	1.95	39 1/2-31
1943	30,570	2,692	1,535	1.91	1.80	43 -36 1/4
1944	31,467	2,972	1,566	1.96	1.80	45 1/8-37 1/2
1945	37,680	3,154	1,756	1.87	1.80	61 1/2-42 1/2
1946	46,223	3,347	2,020	2.03	1.80	61 -42
1947	57,253	4,401	2,857	3.02	1.95	49 1/8-40 1/4
1948	73,597	6,314	3,839	4.15	2.27 1/2	51 -39 1/8
<b>Sutherland Paper Co. (Dec. 31):</b>						
1937	8,137	997	805	2.80	1.80	39 1/8-17 1/2
1939	8,490	866	723	2.52	1.30	30 1/2-22 1/4
1941	12,843	1,574	818	2.85	1.25	23 1/4-16 1/4
1943	15,479	2,541	818	2.85	1.25	33 -26 1/2
1944	14,947	2,260	710	2.47	1.35	34 -29
1945	14,908	1,470	609	2.12	1.35	42 1/2-31
1946	19,730	2,614	1,611	4.68	1.75	55 1/4-38
1947	25,178	3,814	2,364	6.87	2.50	47 -36
1948	27,046	3,330	2,070	6.02	2.50	44 1/2-31
<b>Union Bag &amp; Paper Corp. (Dec. 31):</b>						
1937	15,691	1,675	1,385	1.32	0.50	18 1/8-8 1/4
1939	17,562	1,134	966	0.76	Nil	13 1/8-6
1941	27,871	5,619	2,168	1.70	1.00	12 1/4-7
1943	33,555	2,767	1,058	0.83	0.30	11 1/4-8
1944	39,021	6,722	1,584	1.25	0.75	15 1/2-9 1/4
1945	41,391	6,408	1,646	1.30	0.85	26 1/4-14 1/4
1946	44,871	8,970	5,255	4.13	1.30	39 -23
1947	63,512	19,981	11,757	7.93	3.00	37 1/4-25 1/2
1948	76,530	22,658	13,608	9.17	4.00	39 1/8-27 1/8
<b>West Virginia Pulp &amp; Paper Co. (Oct. 31):</b>						
1937	31,413	3,516	2,862	2.14	0.70	41 -15 1/2
1939	29,760	1,240	1,095	0.18	0.20	19 1/8-9 1/2
1941	47,521	6,820	4,520	3.97	1.80	20 1/8-15
1943	53,715	7,662	2,610	1.86	1.25	16 1/4-11 1/4
1944	59,098	6,484	2,384	1.80	1.00	28 -16 1/4
1945	59,188	3,442	2,142	1.63	1.00	40 -22 1/4
1946	67,212	8,954	5,104	4.93	2.40	53 1/4-32 1/4
1947	85,989	17,635	10,935	11.40	3.00	47 -32 1/2
1948	93,243	17,217	10,842	11.33	4.00	51 1/8-38 1/4
<b>Soundview Pulp Co. (Dec. 31):</b>						
1937	6,537	1,987	1,627	1.54	1.50	N.A.
1939	5,768	679	565	0.45	0.12 1/2	14 1/8-5 1/2
1941	13,019	4,814	1,794	1.71	1.00	11 1/4 -6 1/2
1943	10,706	1,845	810	0.70	1.00	10 1/2 -7 1/2
1944	11,682	1,991	754	0.65	0.70	11 1/4 -9 1/4
1945	10,386	1,330	838	0.73	0.60	18 -10 1/4
1946	12,359	3,197	2,017	1.94	0.70	22 1/2-15
1947	24,654	10,711	7,140	7.25	2.00	33 1/2-21 1/4
1948	24,616	9,875	6,150	6.30	3.00	33 1/8-24 1/8
<b>Canadian—</b>						
<b>Abitibi Power &amp; Paper Co., Ltd. (Dec. 31):</b>						
1937	21,755	3,054	3,054	10.67	Nil	v
1939	16,146	1,660	1,660	10.45	Nil	v
1941	27,038	5,626	5,626	12.75	Nil	v
1943	29,940	11,931	1931	11.04	Nil	v
1944	28,211	12,294	11,044	10.95	Nil	v
1946	N.A.	13,875	5,600	2.72	Nil	22 1/4-14
1947	63,340	18,363	8,563	5.11	Nil	21 1/4-14 1/4
1948	75,076	17,263	9,413	5.79	Nil	19 1/4-12 1/2
<b>British Columbia Pulp &amp; Paper Co., Ltd. (Dec. 31):</b>						
1937	N.A.	355	225	1.86	Nil	48 -9
1939	N.A.	1,138	1,147	11.86	Nil	10 -6
1941	N.A.	2,101	601	5.62	Nil	11 -7
1943	N.A.	264	164	1.25	Nil	8 -8
1944	N.A.	653	368	3.29	Nil	38 -14 1/4
1945	N.A.	978	440	4.01	Nil	63 -36 1/4
1946	N.A.	1,991	991	9.52	Nil	78 -46
1947	N.A.	5,156	2,556	25.17	Nil	98 1/2-43
1948	N.A.	4,976	3,226	31.87	Nil	135 -72
<b>Consolidated Paper Corp. Ltd. (Dec. 31):</b>						
1940	N.A.	1,282	875	0.34	Nil	8 1/2 -3 1/4
1941	N.A.	1,520	880	0.34	Nil	4 1/2 -2 1/2
1943	N.A.	2,294	1,294	0.50	Nil	6 1/2 -3
1944	N.A.	2,708	1,108	0.43	Nil	9 1/2 -5 1/4
1945	N.A.	3,689	1,789	0.70	Nil	17 -8
1946	N.A.	10,659	4,859	1.89	\$0.50	21 1/2-14 1/2
1947	N.A.	N.A.	N.A.	\$1.50	\$1.50	18 1/2-14 1/2
1946	N.A.	10,659	4,859	1.89	\$0.50	23 -15 1/2
1947	N.A.	19,362	9,712	3.79	\$1.50	21 1/2-14 1/2
1948	N.A.	18,938	11,738	4.58	\$1.50	18 1/2-12

chairman of the board and president, American Writing Paper Corp., Holyoke, Mass., said: "This has been a year of marked change in which there has been observer a shift from a position of relatively inadequate supply to one where the available supply is equal to the indicated demand." American Writing reported a net loss of \$49,692.68 as compared with a net profit in 1947 of \$574,490.28 after taxes.

Sidney Frohman, president of The Hinde & Dauch Paper Co., felt that the long term outlook for his company was favorable, although he took due note of "decreases and slack of business in certain lines and in certain areas from time to time. We do not expect an immediate return to the highest levels reached during recent years, nor do we expect that prices in our industry will resist any general price reduction that may occur."

The answer to this? In Mr. Frohman's mind it is definitely "development of new designs and new uses for our products . . . and efficient production to maintain our position in the industry." This company showed net earnings of \$3,991,929.51 which amounted to \$8.38 per share compared with \$8.21 in 1947.

Clifford W. Gaylord, president of Gaylord Container Corp., St. Louis and Bogalusa, La., is another industry leader who points out that competition has returned but who sees nothing alarming in that fact.

Net sales of Gaylord Container were \$61,131,000 in 1948, an increase of \$3,418,000 over the previous year's record high sales, according to the company's 1948 annual report just issued. Net earnings for 1948 were \$8,015,000, or \$3.43 per share of common stock. This compares to \$9,529,000, and \$4.06 per share in 1947.

Increased costs of wages and salaries, higher freight rates and higher material costs were cited as the principal reasons why net earnings were \$1,514,000 lower than in 1947. Wages and salaries in 1948 were \$15,256,000—some \$1,919,000 more than in 1947 and \$3,392,000 greater than in 1946. Freight charges were \$1,389,000 greater than in 1947 and \$2,155,000 more than in 1946. Material and services cost \$1,340,000 more than in 1947 and \$3,832,000 more than in 1946. Expenditures for expansion purposes totaled \$5,154,000. Gross sales of products and services totaled \$113,697,000 in 1948, including \$52,566,000 in inter-company sales and purchases. This figure showed a slight increase over the previous year, when the figure was \$113,256,000.

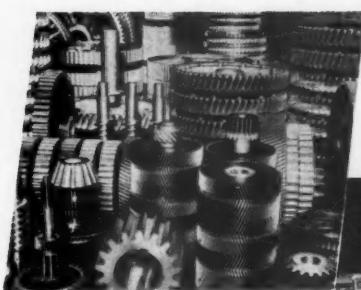
For the year ended Dec. 31, 1948, the combined profit of Robert Gair Co., Inc. and its wholly-owned domestic and Canadian subsidiaries was \$5,103,058, of which \$3,908,187 was derived from operations in the United States and \$1,194,871 from Canada. After payment of \$358,575 in dividends of \$1.20 per share on the Company's Preferred Stock, the balance of \$4,744,483 was equal to \$2.67 per share on the 1,779,888 shares of common stock outstanding December 31, 1948.

For the previous year the comparable combined profit was \$6,010,438, of which \$5,023,023 was earned in the United States and \$987,415 in Canada. After dividends of \$349,700 on the Preferred Stock, the balance of \$5,660,738 was equal to \$3.18 per share on the 1,779,888 shares of Common Stock outstanding December 31, 1947.

Net sales to customers in the United States in 1948 were \$45,801,106, as compared with \$44,837,153 in 1947. Canadian net sales to customers in 1948 were \$15,103,211 against \$13,470,171 in 1947.

**Union Bag's Finances**

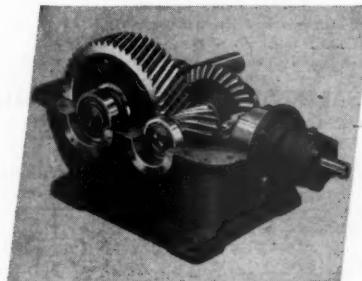
Another important factor in the container field, Union Bag & Paper Corp., showed earnings of \$13,607,790 equal to \$9.17 per share. Dividends were also at a new high point, \$5,932,194 or \$4.00 per share. The capital expenditures of this company totaled over \$8,400,000 in 1948, chiefly for the acquisition and re-equipping of corrugated container plants in Trenton and Chicago, but there were other important expenditures for power plant and pulping equipment at Savannah. Sales



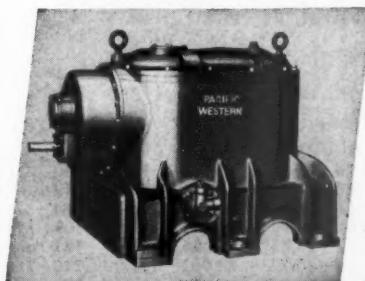
**Gears of all types  
and sizes**



**Single-reduction  
speed reducer**



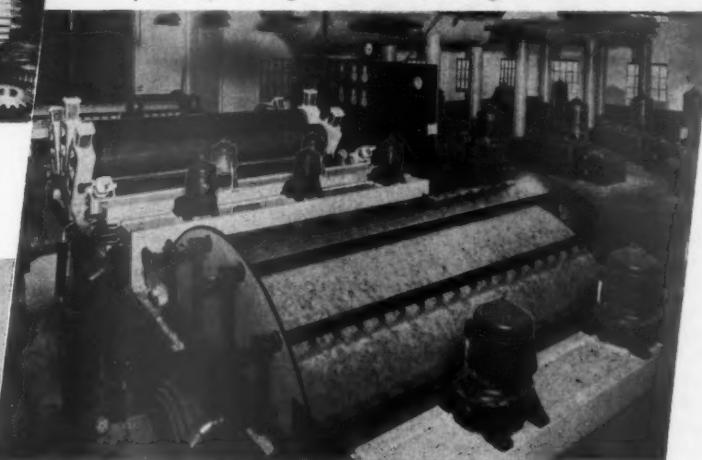
**Right-angle  
speed reducer**



**Vertical-shaft  
speed reducer**

**GOOD  
GEARS  
FOR  
OVER  
50  
YEARS**

Pacific-Western vertical-type motorized speed reducers in operation in an unbleached-sulphite-mill chemical-cleaning plant. Note heavy-duty Pacific-Western agitator drives in the background.



## **SPEED REDUCERS for all types of PULP MILL Service**

Thousands of Pacific-Western speed reducers are in use in the largest pulp mills on log hauls, chip conveyors, fuel conveyors, bleach agitator drives, log transfers, paper-machine drives and many other similar operations. The knowledge gained through these many applications, backed by over 50 years of gearmaking experience, enables us to service your mechanical power-transmission requirements quickly, efficiently, and economically.

**Complete Engineering Service**... Pacific-Western speed reducers are built in ratios from 2:1 to 300:1 and for transmitting from fractional horsepower up to 650 horsepower in standard units; higher capacities available in special designs. In addition, standard units are available in single, double and triple reduction, with single or double extensions on high- and low-speed shafts, as well as with parallel, vertical, or right-angle-shaft arrangement. Our engineers will be glad to assist you in solving your mechanical power-transmission problems. Consult our nearest sales office or representative now.

**Fast Delivery on many popular types and sizes of speed reducers from stock. Let us quote on your needs.**

*Write, wire or phone our nearest plant or office for complete information.*

WESTERN GEAR WORKS, Seattle 4, Washington  
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**PACIFIC GEAR & TOOL WORKS**      **WESTERN GEAR WORKS**



# **PACIFIC-WESTERN**

**GEAR PRODUCTS**

figure was \$76,529,753 or 20% above 1947. President Alexander Calder looks at the leveling off in the first quarter of this year like this—"The industry has made further progress toward eliminating war-induced shortages."

Net sales for Minnesota and Ontario Paper Co. were \$52,559,070 compared with \$48,996,712. While net sales showed an increase the net income was substantially equivalent to the previous year, a situation typical of many companies due to higher costs of labor, materials and freight. Net income worked out to \$4.80 per share as compared with \$4.77 in 1947. During the year cash dividends totaling \$2.00 per share were paid to shareholders.

#### Canadian Reports

Among the Canadian companies, Abitibi Power & Paper Co., Ltd., revealed the following salient points in its annual point: the total funded debt has been reduced by \$11,141,200 and the rate on the present bond issue is 3½% compared with 5% on the original issue; dividends amounting to \$4,131,418 have been paid to preferred stockholders; properties have been added to and modernized by capital expenditures amounting to thus far—\$16,439,059; both physical volume and value of inventories (chiefly of pulpwood) have had to be increased by \$10,402,499 in order to sustain present operational scale; the 5½% bonds and 7% preferred stock of Provincial Paper, Ltd. have been retired, and Abitibi supplied \$4,000,000 of the requirements. Despite these accomplishments the working capital of Abitibi stood at \$19,093,523 as of December, 1948.

Another Canadian company, B. C. Pulp and Paper, Ltd., devoted 83% of its production to dissolving pulp, 73% of this going to the U. S. and the remainder to Canadian users. Interest payments on the company's first mortgage bonds were made in full, and dividends on the preferred shares at the rate of seven percent per annum were paid quarterly, and on each of these \$28 of cumulative arrears was also paid. Considerable plant improvements were made, and \$400,000 has been transferred from former reserve for future decline in inventory values, to General Reserve to avoid inadequacy of total reserves under changing market conditions.

Donnacona Paper Co., Ltd. showed net sales of \$14,357,857 as compared with \$12,474,847 in 1947; and the net profit was \$1,571,899 as compared with \$1,245,174 the previous year. Per share common was \$3.87 as compared with \$3.00 in 1947. Per share preferred was same as in 1947, namely \$4.50. Income and excess profits taxes were \$904,347 as compared with \$1,044,938.

Powell River Co. reported earnings of \$7,307,297 for 1948 before allocating \$450,000 as a special reserve against contingencies, leaving a balance of \$6,857,297 available for distribution and reinvestment, equivalent to \$5.10 a share.

Price Bros. & Co., like many other Canadian companies in the industry, reported the largest production in its history, with a net profit of \$7,986,717, compared with \$6,118,897 the previous year. Fraser Companies with operating profits more than \$1,900,000 higher and net profits up from \$3,981,356 to \$5,599,748 had net earnings equal to \$7.55 a share. Bowater's Newfoundland reported a net profit of \$3,616,595, up from \$3,317,632; Brompton Pulp & Paper Co.'s net of \$1,547,120 was virtually double that of 1947. Consolidated Paper Corporation reported net profit of \$9,711,870, which was equivalent to an increase per share from \$3.79 to \$4.58.

Great Lakes Paper Co., with mills at Fort William, Ont., reported net profits for the year 1948 amounting to \$1,983,799, compared with \$1,805,159 in the previous year, according to the annual report of President Earl Rowe. Net sales last year totaled \$16,685,967, compared with \$15,233,068. Number 5 digester, erected under special pulp sales agreement with Rhinelander Paper Co., went into operation in February, 1949.

#### COMPARATIVE OPERATING RESULTS AND PER SHARE STATISTICS

(Sales, Profits and Income in Thousands of Dollars)

	Net Sales	*Pre-Tax Profits	*Net Income	†Earned Dividends	Per Common Share oPrice Range
<b>Donnacona Paper Co., Ltd. (Dec. 31):</b>					
1937	N.A.	50	41	0.11	Nil 17½- 7½
1939	N.A.	11	9	0.02	Nil N.A.
1941	N.A.	183	105	0.28	\$0.10 3½- 3½
1943	N.A.	345	195	0.52	Nil 7½- 3¾
1944	N.A.	474	274	0.72	Nil 11½- 7
1945	N.A.	539	289	0.77	\$0.50 18½- 9¾
1946	N.A.	1,479	776	1.87	\$0.75 24- 14¾
1947	N.A.	2,290	1,245	3.00	\$1.50 27- 14¾
1948	N.A.	2,476	1,572	3.87	\$1.00 23½- 19
<b>Powell River Co., Ltd. (Dec. 31):</b>					
1937	N.A.	1,977	1,481	1.11	N.A. N.A.
1939	N.A.	3,548	2,602	1.94	N.A. N.A.
1941	N.A.	5,627	2,672	1.99	\$1.80 N.A.
1943	N.A.	4,306	1,737	1.29	\$1.27 N.A.
1944	N.A.	4,526	2,107	1.57	\$1.05 N.A.
1945	N.A.	5,132	2,027	1.51	\$1.05 30½- 18½
1946	N.A.	6,806	3,440	2.56	\$1.60 36- 28
1947	N.A.	10,591	6,012	4.47	\$2.75 44½- 33½
1948	N.A.	w5,961	w3,800	w2.83	s2.75 47½- 37

†Adjusted to reflect present capitalization effective April 15, 1946.

\*Adjusted for effects of renegotiation (where reported) and inclusion of special voluntary reserves created after taxes. †-Adjusted for split-ups. ‡-Disregarding preferred stock dividend areas, if any. N.A.—Not available. \*\*Not comparable with later years due to recapitalization in 1940.

a-In order to conform with data for other companies, fiscal periods are those ending April 30 of following year.

b-Since reorganization. c-Per share statistics are for preferred stock. d-Deficit.

e-Paid in 6% preferred stock (retired in 1944) f-6% stock dividend.

gPlus 10% in stock. (Footnotes to Balance Sheet Data should be read in conjunction herewith).

h-Includes capital gain from sale of Canadian subsidiary.

i-After deducting interest reserve payable.

j-Eight months to Dec. 31, 1948, fiscal year end changed to March 31.

m-Nine months to Jan. 31, 1948, except dividends and price range which are for full year.

n-Earnings revised from data previously reported to stockholders by company; adjustments.

o-Calendar year.

p-Earnings revised from data previously reported to stockholders by company; adjustments mainly for depreciation.

r-40 weeks to Oct. 5, 1948. s-Paid in Canadian funds.

t-Twelve months to Dec. 31. Fiscal year end changed from April 30 to Dec. 31.

u-Reorganization consummated April 15th; earnings are for full year.

v-Not comparable with present common shares due to reorganization. w-Six months to June 30.

#### COMPARATIVE SALIENT BALANCE SHEET DATA (In Thousands of Dollars)

Fiscal Year-end	*Total Assets	*Net Fixed Assets	Inven-tories	Net Working Capital	Funded Dept, etc.	Pre-ferred Stock	Minority Interests	†No. Com. Shares Outstanding
<b>b American Writing Paper Corp. (Dec. 31):</b>								
1937	\$8,782	\$6,487	\$1,173	\$1,980	\$3,072	Nil	Nil	416,028
1939	8,840	6,272	1,414	1,877	2,316	Nil	Nil	416,068
1944	9,596	4,924	1,040	3,638	2,006	Nil	Nil	360,224
1945	9,394	4,816	1,323	3,032	1,506	Nil	Nil	360,224
1946	9,585	4,771	1,459	3,272	833	Nil	Nil	360,224
1947	9,233	4,848	2,209	2,942	Nil	Nil	Nil	357,224
1948	8,375	4,839	1,884	2,709	Nil	Nil	Nil	330,500
<b>c Brown Co. (Nov. 30):</b>								
1941	44,854	26,205	7,424	12,887	17,349	p\$14,448	Nil	1,999,659
1942	43,104	25,303	8,803	11,774	14,853	p14,448	Nil	1,999,659
1944	42,146	22,429	10,276	13,746	15,327	p14,448	Nil	1,999,659
1945	43,031	21,857	6,986	14,328	15,099	p14,448	Nil	1,999,659
1946	49,706	23,696	8,326	16,399	19,099	p14,448	Nil	1,999,659
1947	54,014	26,641	9,664	16,114	18,799	p14,448	Nil	1,999,659
1948	55,848	28,594	17,161	17,746	17,300	p14,415	Nil	1,992,817
<b>Champion Paper &amp; Fibre Co. (April 30):</b>								
1936	32,150	21,688	5,076	4,464	5,013	7,750	Nil	1,102,000
1939	38,385	26,582	5,026	6,401	10,415	8,779	Nil	1,101,400
1943	50,236	24,385	7,344	20,344	11,455	11,500	84	1,100,000
1944	51,899	23,336	7,284	20,905	10,900	11,500	103	1,092,000
1945	51,404	26,694	8,310	18,752	13,096	10,000	121	1,102,000
1946	59,523	33,896	10,266	15,221	12,985	10,000	210	1,102,000
1947	76,825	43,651	12,113	19,398	18,439	10,000	288	1,102,000
i 1948	84,069	46,767	14,641	22,364	18,439	10,000	334	1,102,000
<b>Columbia River Paper Mills (Dec. 31):</b>								
1936	5,910	3,554	360	474	635	p680	Nil	20,000
1939	4,422	2,698	664	706	1,503	p200	Nil	20,000
1943	4,741	2,558	815	1,130	1,305	p77	Nil	20,000
1944	4,563	2,273	912	1,085	911	Nil	Nil	20,000
1945	4,884	2,251	1,088	1,008	776	Nil	Nil	20,000
1946	6,391	2,373	1,520	1,646	538	Nil	Nil	20,000
1947	10,251	2,834	1,640	2,910	1,253	Nil	Nil	20,000
1948	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

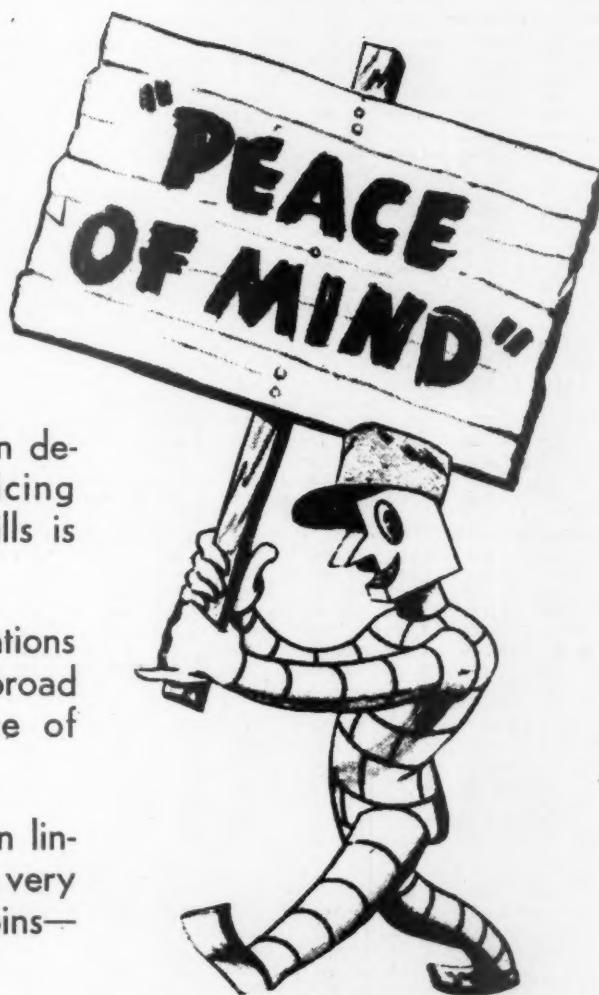
## A STEBBINS LUMP SUM CONTRACT IS AN INVESTMENT IN

WHETHER the contract covers one chest or tank lining, or all the corrosion or alkali resistant linings for the entire mill, it is Stebbins responsibility to provide a dependable and satisfactory job that assures continuous operation.

Sixty-four years experience in designing, installing and servicing linings in pulp and paper mills is back of this contract.

Thousands of successful installations located on this continent and abroad provide tangible evidence of reliability.

Think twice before investing in linings—the wrong one can prove very costly—be safe, specify Stebbins—and have no regrets.



**Stebbins Engineering Corporation**

TEXTILE TOWER

SEMC

SEATTLE 1, WASHINGTON

**COMPARATIVE SALIENT BALANCE SHEET DATA**  
(In Thousands of Dollars)

Fiscal Year-end	Total Assets	*Net Fixed Assets	Inven-tories	Net Working Capital	Funded Debt, etc.	Pre-ferred Stock	Minority Interests	†No. Com. Shares Outstanding
<b>Consolidated Paper Co. (Dec. 31):</b>								
1936	11,344	7,036	1,378	3,282	Nil	Nil	Nil	750,000
1939	8,755	3,469	1,790	4,292	Nil	Nil	Nil	750,000
1944	12,368	2,238	1,260	6,717	Nil	Nil	Nil	750,000
1945	12,148	2,413	2,085	7,091	Nil	Nil	Nil	750,000
1946	13,115	2,996	2,011	7,121	Nil	Nil	Nil	750,000
1947	16,459	4,225	2,660	7,722	Nil	Nil	Nil	750,000
1948	17,042	5,825	2,691	7,343	Nil	Nil	Nil	750,000
<b>Container Corp. of America (Dec. 31):</b>								
1936	23,633	17,371	2,901	3,544	6,981	Nil	Nil	653,540
1939	26,110	17,617	3,644	4,710	5,126	Nil	Nil	781,253
1944	28,119	15,500	3,737	6,635	Nil	Nil	Nil	781,253
1945	30,529	15,499	4,529	9,078	Nil	Nil	Nil	781,253
1946	42,893	19,191	6,136	k14,080	Nil	Nil	Nil	990,474
1947	58,633	27,796	9,271	k23,243	Nil	10,000	Nil	990,474
1948	63,168	33,048	8,630	k23,098	Nil	10,000	Nil	990,474
<b>Crown Zellerbach Corp. (a April 30):</b>								
1936	104,600	66,382	11,913	13,204	19,278	52,965	1,212	2,261,199
1939	103,037	62,653	12,741	17,703	13,800	52,966	1,187	2,261,199
1943	105,164	60,386	18,591	29,814	2,573	52,966	1,234	2,261,199
1944	105,706	58,505	16,400	30,599	Nil	52,966	1,262	2,261,199
1945	111,609	62,394	19,125	32,319	2,621	52,801	1,237	2,267,375
1946	129,000	72,892	25,875	33,725	6,128	46,607	1,255	2,499,646
1947	155,742	88,556	34,893	45,357	20,089	43,357	1,309	2,601,508
<b>Eddy Paper Corp. (Dec. 31):</b>								
1936	6,730	4,532	1,407	1,491	105	Nil	Nil	177,900
1939	8,157	4,389	1,119	1,134	488	Nil	Nil	185,045
1944	11,299	1,944	998	3,745	Nil	Nil	Nil	164,535
1945	10,883	1,374	1,093	4,895	Nil	Nil	Nil	614,535
1946	10,559	1,592	1,196	5,827	Nil	Nil	Nil	164,530
1947	13,310	2,157	1,584	k5,214	Nil	Nil	Nil	164,527
1948	14,643	5,126	1,984	k5,110	Nil	Nil	Nil	165,527
<b>Gair (Robert) Co., Inc. (Dec. 31):</b>								
1936	18,469	12,529	3,076	2,902	4,825	p9,280	650	574,613
1939	17,093	7,819	2,032	1,662	3,563	p9,310	650	574,646
1944	15,552	7,672	2,032	4,126	3,305	3,728	650	1,133,822
1945	17,427	7,988	2,891	5,727	3,000	5,680	650	1,231,447
1946	29,894	7,701	2,720	5,655	9,475	5,680	650	1,740,440
1947	36,836	10,559	4,207	7,238	10,864	3,976	650	1,779,888
1948	39,176	11,813	4,705	5,762	10,116	5,976	650	1,779,888
<b>d Gaylord Container Corp. (Dec. 31):</b>								
1937	12,872	7,765	1,518	3,445	Nil	5,000	Nil	1,617,663
1939	12,967	8,034	1,604	3,266	Nil	5,315	Nil	1,617,663
1944	21,243	11,028	3,607	7,177	5,187	4,511	Nil	1,625,463
1945	21,169	8,231	3,504	10,155	4,842	4,483	Nil	1,665,933
1946	24,129	9,428	3,969	11,728	4,497	1,654	Nil	2,025,085
1947	26,467	12,288	4,621	10,964	Nil	Nil	Nil	2,338,317
1948	30,724	16,273	6,346	11,345	Nil	Nil	Nil	2,338,317
<b>Great Northern Paper Co. (Dec. 31):</b>								
1936	42,604	27,217	7,740	13,356	120	Nil	Nil	997,580
1939	43,567	29,057	6,436	12,684	144	Nil	Nil	997,480
1944	44,774	28,996	5,663	12,700	24	Nil	Nil	997,480
1945	45,550	30,003	6,729	12,210	956	Nil	Nil	997,480
1946	46,888	29,297	8,396	13,224	637	Nil	Nil	997,480
1947	49,269	28,935	8,807	14,521	319	Nil	Nil	997,480
1948	51,090	30,709	9,974	13,856	43	Nil	Nil	997,480
<b>Hammermill Paper Co. (Dec. 31):</b>								
1936	11,882	6,309	1,805	2,833	270	3,803	Nil	360,000
1939	11,051	5,717	2,097	3,790	Nil	2,500	Nil	360,000
1944	12,716	5,204	1,912	5,180	Nil	2,420	Nil	360,000
1945	18,710	5,483	2,476	5,930	5,000	3,670	Nil	360,000
1946	20,232	8,544	3,081	7,251	5,000	3,670	Nil	360,000
1947	22,369	11,465	5,348	7,801	5,000	3,670	Nil	360,000
1948	22,662	11,782	6,305	8,375	5,000	3,620	Nil	360,000
<b>Hinde &amp; Dauch Paper Co. (Dec. 31):</b>								
1936	11,897	5,754	1,972	3,307	490	3,608	Nil	360,000
1939	12,565	5,987	2,085	3,702	544	3,590	Nil	360,250
1944	14,648	5,315	2,408	5,154	Nil	3,590	Nil	360,250
1945	14,997	5,368	2,538	5,655	Nil	1,470	Nil	427,824
1946	16,434	6,793	2,694	6,247	Nil	Nil	Nil	476,379
1947	18,614	7,591	3,234	k7,677	Nil	Nil	Nil	476,379
1948	20,917	8,523	4,106	k9,308	Nil	Nil	Nil	476,379
<b>e International Paper Co. (Dec. 31):</b>								
1936	240,555	179,178	26,588	35,250	80,730	p91,349	15,833	1,822,243
1939	219,867	158,507	25,600	35,605	58,851	p92,594	2,026	1,823,270
1944	249,196	131,402	29,228	71,122	48,796	p92,597	316	1,823,855
1945	252,358	128,125	32,054	65,465	46,568	92,596	179	1,863,862
1946	252,533	134,229	43,104	k70,089	18,120	23,000	179	3,560,000
1947	278,586	147,733	52,653	k87,721	Nil	23,000	179	3,560,000
1948	323,241	170,566	68,542	k107,367	Nil	23,000	Nil	3,560,000



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It took the champion ten rounds to put the squeeze on the challenger — ten seconds to finish him...

To make paper or board your machine must combine plenty of squeeze at the presses with high speed at the drier rolls. This is where Hamilton Felts prove themselves champions!

Equip your machines with Hamilton Felts. Speed them up. Your sheets will be dried before the bell rings.

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

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*Exporters of  
wood pulp to all  
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At the end of the late war, one large newsprint concern had two Bauer Pulpers operating on screen rejects in two of its mills. Today those two mills have a total of 10 machines, and five additional Bauers have been ordered for a third mill. *Back for more!* These machines were purchased with a first-hand knowledge of what their returns would be. The extra quality of the fiber produced gives them a better sheet and each Pulper is turning out several hundred dollars' worth of valuable pulp each day from screenings.

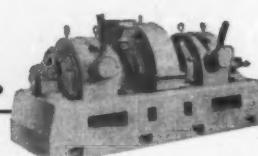
A felt mill used five Bauers as refiners until 1947. Today they have twelve Pulpers fiberizing semi-chemically cooked chips as a partial furnish for their enlarged facilities. *Back for more!*

A towel and napkin plant installed one Bauer Pulper in January. By March they had purchased a second and were so pleased with results that by September they ordered 4 more. *Back for more!*

*Satisfied users? YES! That's what brings them BACK FOR MORE!*

For the production of long, pliable, free fiber from a wide variety of raw material sources for almost every grade of finished product, the Bauer is outstanding. The repeat orders above confirm that statement. Address your inquiry for detailed information to

**THE BAUER BROS. CO.**  
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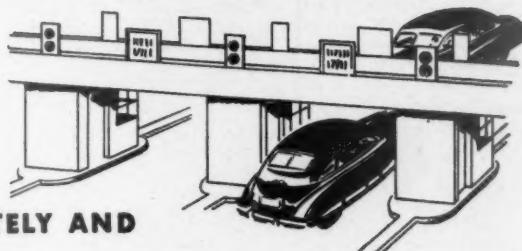
YES! GO WEST! 1949 Fall Meeting TAPPI — Portland, Ore.

## COMPARATIVE SALIENT BALANCE SHEET DATA (Cont.) (In Thousands of Dollars)

Fiscal Year-end	Total Assets	*Net Fixed Assets	Inven-tories	Net Working Capital	Funded Debt, etc.	Pre-ferred Stock	Minority Interests	†No. Com. Shares Outstanding
<b>Kimberly-Clark Corp. (Dec. 31):</b>								
1936	45,788	28,246	4,096	4,004	5,116	9,963	Nil	974,346
1939	50,858	24,508	5,141	7,688	8,600	9,963	Nil	976,346
1944	61,771	30,816	7,447	15,936	9,528	10,242	Nil	1,199,520
1945	64,337	33,741	8,160	16,785	10,000	10,242	Nil	1,199,520
1946	74,887	43,131	10,842	16,937	10,000	17,242	Nil	1,199,520
1947	99,168	62,539	15,806	19,203	20,400	17,242	Nil	1,499,520
1948	125,790	77,327	17,586	12,524	32,700	17,242	Nil	1,499,520
<b>Marathon Corp. (Oct. 31):</b>								
1936	10,966	7,160	2,199	2,425	2,350	600	Nil	800,000
1939	14,307	7,186	3,499	4,512	3,597	1,199	28	798,268
1944	29,781	9,484	4,702	16,288	10,136	5,000	61	800,000
1945	31,280	15,689	6,442	11,067	10,071	5,000	66	800,000
1946	44,543	24,724	10,613	12,550	5,424	5,000	Nil	1,300,000
1947	52,670	28,945	14,128	13,975	8,074	4,925	Nil	1,300,000
1948	62,362	33,562	18,323	13,630	8,678	4,850	845	1,300,000
<b>Mead Corp. (Dec. 31):</b>								
1936	29,752	20,665	3,720	4,326	7,240	3,315	1,023	619,374
1939	34,525	21,904	4,237	5,790	7,536	8,114	876	619,374
1944	37,387	19,756	5,616	9,586	6,000	7,983	153	693,610
1945	39,615	19,922	7,213	10,222	8,000	7,971	164	693,613
1946	51,716	23,944	9,060	12,684	12,000	12,052	186	707,424
1947	58,862	28,421	12,114	12,859	12,000	12,021	189	707,492
1948	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<b>h Minnesota &amp; Ontario Paper Co. (Dec. 31):</b>								
1941	44,138	29,991	4,630	8,789	9,757	Nil	Nil	1,344,544
1944	45,180	27,338	5,801	10,982	6,310	Nil	Nil	1,344,543
1945	46,810	28,503	6,587	11,138	5,700	Nil	Nil	1,344,543
1946	48,515	29,993	9,708	11,307	2,842	Nil	Nil	1,292,522
1947	56,062	33,917	10,064	11,663	2,684	Nil	Nil	1,289,994
1948	58,183	37,911	12,228	10,974	2,526	Nil	Nil	1,284,930
<b>f National Container Corp. (Dec. 31):</b>								
1937	6,458	5,017	343	640	2,247	Nil	Nil	1,982,892
1939	6,787	5,188	416	709	2,343	Nil	7	1,982,892
1944	12,328	6,918	1,372	2,553	4,522	Nil	44	1,982,892
1945	15,180	8,274	2,361	4,192	4,260	2,212	54	2,028,990
1946	23,840	12,000	3,748	4,930	4,714	1,063	219	2,433,540
1947	30,566	15,340	4,541	5,947	1,857	197	96	2,639,955
1948	35,178	21,538	5,758	2,998	1,706	130	57	2,713,978
<b>Oxford Paper Co. (Dec. 31):</b>								
1936	28,560	17,426	2,242	3,803	4,580	p 8,287	Nil	340,172
1939	28,833	16,919	2,603	4,273	4,490	p 10,231	Nil	380,735
1944	27,607	14,836	3,257	k 8,527	1,890	p 10,143	Nil	380,735
1945	28,413	14,415	5,370	k 10,334	1,700	p 10,143	Nil	380,735
1946	40,317	16,256	5,542	k 18,078	9,048	p 10,143	Nil	380,735
1947	41,552	22,188	7,081	k 14,125	8,012	10,143	Nil	380,735
1948	40,708	25,422	7,610	k 10,966	7,211	10,143	Nil	380,735
<b>Puget Sound Pulp &amp; Timber Co. (Dec. 31):</b>								
1937	7,146	4,841	393	350	23	2,473	Nil	503,674
1939	5,642	4,712	265	270	11	2,473	Nil	503,674
1944	10,097	4,444	726	1,027	488	1,121	Nil	653,836
1945	10,543	4,743	613	907	1,221	1,121	Nil	653,880
1946	12,377	5,439	920	1,269	1,413	1,121	Nil	653,880
1947	16,543	7,074	2,372	2,041	111	2	Nil	778,189
1948	21,000	8,806	3,337	3,570	389	Nil	Nil	778,189
<b>g Rayonier Inc. (a April 30, 1937, 45; Dec. 31 thereafter):</b>								
1937	21,435	17,378	2,161	1,248	425	15,655	Nil	963,872
1939	31,530	24,124	3,559	4,322	6,500	15,655	Nil	963,871
1943	30,433	22,330	3,822	5,000	3,427	15,655	Nil	963,871
1944	37,072	23,539	3,550	k 9,954	9,119	15,655	Nil	963,871
1945	35,869	22,528	3,727	k 10,104	8,266	15,655	Nil	963,871
1946	39,400	23,520	4,986	k 11,521	8,419	15,655	Nil	993,871
1947	62,524	37,674	7,474	k 17,206	18,591	15,655	3,739	993,871
1948	64,635	40,991	8,311	k 16,233	16,402	15,655	Nil	993,871
<b>St. Regis Paper Co. (Dec. 31):</b>								
1936	58,698	27,704	3,173	4,325	6,910	p 4,428	915	4,120,714
1939	59,123	27,278	3,066	6,279	7,899	p 4,428	874	4,120,714
1944	58,777	32,179	8,373	18,453	9,708	p 7,372	3,345	4,120,714
1945	69,794	31,230	11,638	23,031	19,082	p 7,207	2,405	4,120,714
1946	99,170	53,845	20,590	29,070	16,756	20,000	1,135	5,170,714
1947	132,644	72,869	30,297	36,444	34,273	19,019	656	5,170,714
1948	157,621	85,116	34,456	42,893	44,623	18,598	495	5,170,714
<b>Scott Paper Co. (Dec. 31):</b>								
1936	7,749	4,508	1,710	2,146	Nil	Nil	Nil	569,980
1939	20,230	9,219	2,380	5,575	702	6,034	Nil	667,956
1944	22,362	9,851	2,613	7,123	Nil	6,030	Nil	667,942
1945	25,976	11,566	5,979	7,760	Nil	6,030	Nil	804,782
1946	28,804	13,313	5,015	9,627	Nil	6,589	Nil	871,861
1947	33,208	14,722	8,509	9,021	Nil	6,589	Nil	871,847
1948	35,755	14,930	10,215	11,962	j 2,000	6,589	Nil	871,847

# This Panel Operates Like a Toll Station

TO REGULATE FLUID "TRAFFIC" ACCURATELY AND  
APPORTION COSTS EQUITABLY



19 Bristol Electric Flowmeters in this turbine room tell at a glance and give accurate records of the flow of steam supplied to 5000 kw turbine, by-pass steam, turbine exhaust, feed water, steam to deaerating heater, to chemical plant, to machine room, to bleach plant, to digester, to acid plant, to 2500 kw extraction turbine, condensate from machine room, and return water from digester.

With Bristol Recording Flowmeters and Automatic Flow Controllers, you can be sure the flow of steam and other fluids to the various processes in your plant is accurately controlled . . . and you can accurately charge each department for the amounts it uses.

In many pulp and paper mills, Bristol Flowmeters are used in controlling "balance" in such processes as brown stock washing, evaporators and digesters . . . and also as integrating and totalizing instruments to measure amounts of steam and chemicals used in order to pro-rate expenses and check up on waste.

Bristol Flowmeters—both mechanical and electric—are featured by forged steel meter body; accurately-machined float chamber; large, powerful float; interchangeable high pressure tube; pressure-tight, stainless steel bearing. Available with accurate integrators.

Write for Bulletin F1600 on Bristol Electric and Mechanical Mercury Manometer Type Flowmeters for recording, integrating and controlling. THE BRISTOL COMPANY, 142 Bristol Road, Waterbury 91 Conn. (The Bristol Co. of Canada, Ltd., Toronto, Ont. Bristol's Instrument Co., Ltd., Lynch Lane, Weymouth, Dorset, England.)



AUTOMATIC CONTROLLING, RECORDING  
AND TELEMETRY INSTRUMENTS

### COMPARATIVE SALIENT BALANCE SHEET DATA

(In Thousands of Dollars)

Fiscal Year-end	Total Assets	*Net Fixed Assets	Inven-tories	Net Working Capital	Funded Debt, etc.	Pre-ferred Stock	Minority Interests	†No. Com. Shares Outstanding
<b>Soundview Pulp Co. (Dec. 31):</b>								
1936	7,431	5,848	576	448	900	293	Nil	937,000
1939	11,218	8,901	1,429	1,323	1,040	2,108	Nil	976,500
1944	12,619	7,860	1,442	1,656	Nil	2,108	Nil	976,500
1945	11,690	8,001	968	2,189	Nil	2,108	Nil	976,500
1946	13,874	8,994	1,532	1,436	Nil	2,108	Nil	976,500
1947	17,369	9,710	3,037	3,192	Nil	Nil	Nil	976,500
1948	19,129	10,183	3,149	6,138	Nil	Nil	Nil	976,500
<b>Sutherland Paper Co. (Dec. 31):</b>								
1936	4,826	2,728	924	1,558	Nil	Nil	Nil	287,000
1939	6,515	3,335	2,291	1,732	Nil	Nil	Nil	287,000
1944	7,996	4,078	2,012	2,788	Nil	Nil	Nil	287,000
1945	9,767	3,995	2,359	4,730	1,500	Nil	Nil	287,000
1946	12,081	5,136	2,727	5,082	Nil	Nil	Nil	344,000
1947	15,350	6,613	4,952	5,144	Nil	Nil	Nil	344,000
1948	19,695	10,014	5,468	6,249	3,400	Nil	Nil	344,000
<b>Union Bag &amp; Paper Corp. (Dec. 31):</b>								
1936	12,715	8,679	2,112	2,946	2,077	Nil	Nil	1,045,732
1939	20,244	14,813	2,397	4,116	4,997	Nil	Nil	1,262,730
1944	26,473	15,870	3,416	6,943	5,859	Nil	Nil	1,271,437
1945	22,425	12,841	3,474	7,301	2,946	Nil	Nil	1,271,437
1946	28,385	16,379	4,613	8,357	4,136	Nil	Nil	1,271,437
1947	42,323	22,343	5,710	14,744	3,596	Nil	Nil	1,483,298
1948	49,617	28,829	8,690	15,346	3,244	Nil	Nil	1,483,298
<b>West Virginia Pulp &amp; Paper Co. (Oct. 31):</b>								
1936	56,437	32,855	5,530	12,027	4,000	15,524	Nil	902,660
1939	61,553	38,246	6,793	16,652	9,591	15,583	Nil	902,432
1944	59,345	29,665	6,761	k22,136	Nil	15,281	Nil	902,432
1945	63,524	28,201	6,860	k27,806	Nil	14,825	Nil	902,432
1946	67,369	32,187	10,272	k28,263	Nil	14,435	Nil	902,432
1947	73,386	37,996	11,192	k31,528	Nil	14,435	Nil	902,432
1948	75,846	39,009	12,727	k32,738	Nil	13,646	Nil	902,432
<b>Canadian—</b>								
<b>r Abitibi Power &amp; Paper Co., Ltd. (Dec. 31):</b>								
1936	121,956	68,599	3,073	2,241	50,485	p35,882	Nil	1,088,117
1939	121,679	65,139	5,895	10,773	50,895	p35,882	Nil	1,088,117
1943	130,324	46,638	7,645	25,532	71,343	p35,882	Nil	1,088,117
1944	127,504	44,120	8,347	24,260	66,629	p35,882	Nil	1,088,117
1945	123,378	41,866	9,996	26,895	62,988	p35,882	Nil	1,088,117
1946	124,869	82,672	17,529	24,248	53,094	28,907	Nil	1,241,694
1947	128,982	86,217	27,342	15,650	42,465	28,905	Nil	1,241,694
1948	132,300	89,182	26,999	19,094	39,566	28,905	Nil	1,241,694
<b>British Columbia Pulp &amp; Paper Co., Ltd. (Dec. 31):</b>								
1936	9,015	6,642	556	795	5,177	p556	Nil	100,000
1939	11,161	7,321	894	143	5,311	p556	Nil	100,000
1943	11,506	7,447	1,311	1,693	5,731	p556	Nil	100,000
1944	12,305	8,176	1,410	2,234	4,970	p556	Nil	100,000
1945	12,311	7,797	1,530	1,869	4,841	p556	Nil	100,000
1946	14,417	9,638	1,914	600	4,089	p556	Nil	100,000
1947	19,016	11,255	3,364	3,062	6,000	p556	Nil	100,000
1948	21,068	12,870	5,188	4,489	5,800	p556	Nil	100,000
<b>Consolidated Paper Corp., Ltd. (Dec. 31):</b>								
1936	67,925	56,615	5,840	d725	52,096	Nil	Nil	2,308,789
1939	60,153	47,367	7,897	7,413	51,565	Nil	Nil	2,308,789
1944	63,782	28,898	12,666	25,812	43,847	Nil	Nil	2,562,702
1945	61,055	24,980	15,219	27,112	42,260	Nil	Nil	2,563,073
1946	75,425	38,631	22,501	24,705	33,028	Nil	Nil	2,564,195
1947	86,934	38,640	30,510	31,018	31,736	Nil	Nil	2,565,056
1948	91,892	38,513	36,513	35,251	29,211	Nil	Nil	2,565,544
<b>Donnacona Paper Co., Ltd. (Dec. 31):</b>								
1936	12,392	10,890	907	777	6,584	Nil	Nil	376,572
1939	14,029	11,615	1,257	1,341	7,263	Nil	Nil	376,572
1944	15,823	12,219	2,266	2,447	5,860	Nil	Nil	376,572
1945	16,958	12,925	2,458	2,209	5,860	Nil	Nil	376,572
1946	19,073	13,116	3,521	4,424	4,988	2,500	Nil	376,572
1947	17,045	10,462	5,077	3,647	6,500	2,500	Nil	376,572
1948	17,890	10,255	6,123	4,672	6,305	2,500	Nil	376,572
<b>Powell River Co., Ltd. (Dec. 31):</b>								
1943	38,964	11,101	2,083	3,568	Nil	Nil	368	1,344,695
1944	40,537	9,455	2,186	5,377	Nil	Nil	Nil	1,344,695
1945	43,126	9,902	2,275	5,974	Nil	Nil	Nil	1,344,695
1946	47,632	11,081	2,429	9,355	Nil	Nil	Nil	1,344,695
1947	55,107	15,414	3,980	7,268	Nil	Nil	Nil	1,344,695
1948	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

\*Does not include investments and/or interests in companies not consolidated. †Adjusted for split-ups. N.A.—Not available.

a-In order to conform with data for other companies, fiscal years given are for period ending April 30th of year following; b-Reorganized in March, 1937. c-Reorganized in December, 1939. d-Organized (consolidation) in June, 1937. e-Organized in June, 1941; principal predecessor re-capitalized in September, 1937. f-Organized in March, 1937. g-Organized (consolidation) in November 1937. h-Reorganized in February, 1941. r-Reorganization consummated on April 15, 1946. p-Preferred stock dividends in arrears. k-Includes non-current construction fund and segregated security holdings. i-As of Dec. 31, 1948. j-Subsequently prepaid.

Funded debt includes deferred interest on bonds where such condition exists.

Note: The foregoing information has been obtained from sources believed to be reliable but is not guaranteed.



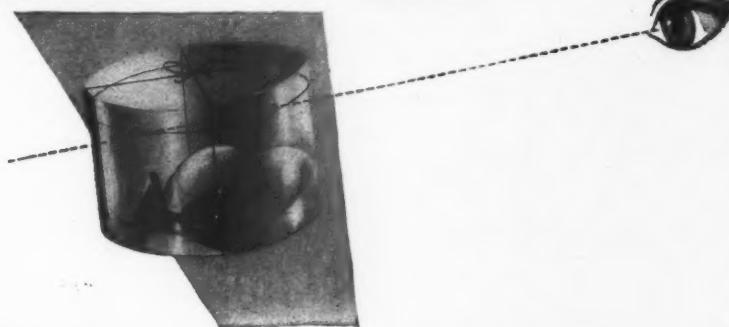
**RESTIGOUCHE**  
BLEACHED SULPHITE PULP

*R*  
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BLEACHED SULPHITE PULP

**RESTIGOUCHE COMPANY, LTD.**  
**Campbellton, N.B., Canada**



## YOU'RE LOOKING THROUGH A TREE



Many types of wearing apparel, drapes, and other textile products are made of yarns produced from highly purified wood cellulose.



Automobile and truck tires have longer life if they are made with viscose rayon cords, which are produced from wood cellulose.



There are other products made from purified wood cellulose—photographic film, vulcanized fiber, lacquers, to name a few.

The transparent material that protects this lady's hat started out as part of a tree. Cellulose acetate it's called—it is made from highly purified cellulose derived by chemically processing wood. You will find flowers as well as hats packed in this material, and a variety of toiletries and other articles where both product protection and eye-appeal are important.

Another familiar transparent material—cellophane—is used even more extensively for packaging purposes, particularly for foods. It, too, is made from highly purified wood cellulose.

That is why, when you inspect a product through a transparent wrapping, the chances are you are "looking through a tree."

Rayonier does not make cellulose acetate or cellophane. It is our job to convert trees into highly purified wood cellulose from which transparent packaging materials—and many other useful products—are made. We supply highly purified wood cellulose in a number of types, each developed to give best results in making the various end products for which it is used.

**RAYONIER**  
INCORPORATED

EXECUTIVE OFFICES: 122 East 42nd Street, New York 17, New York • MILLS: Hoquiam, Port Angeles, Shelton, Washington; Fernandina, Florida

PRODUCER OF HIGHLY PURIFIED WOOD CELLULOSE FOR TEXTILES • TIRE CORD • CELLOPHANE • PLASTICS

# A SURVEY OF NON-PAPER USES OF CELLULOSE

Many observers, who watch statistics and trends, have said that 1948 may be one of those peaks of production which occur about every 20 years. They are usually followed by a sag and gradually are exceeded, more and more, until another great peak occurs. The year 1929 was such a peak and served as a basis of comparison for many years after. The year 1948 may well be such a point for the pulp and paper industry even if it is not so for the automobile people.

Early in 1948 when a survey was being prepared for this Review Number it was pointed out by Rex Vincent of the Bulkley, Dunton Pulp Co., that production of dissolving pulps was very close to capacity but that production would probably increase in 1948, more so in Canada than in the U. S. because the margin between production and capacity was greater in Canada than in this country.

In the discussion which follows, the U. S. will be treated first and then combined with Canada and discussed as North America. The relationships which exist between the two countries are particularly effective on these pulps and it is difficult to separate them and have any sort of conclusive picture because Canada supplies almost as much of this pulp as is produced within our own boundaries.

Although these pulps are called "dissolving" pulps they are not all dissolved. They represent that part of cellulose produced from wood that is used as a chemical and not as a building material. Pulps made for paper are essentially a building material from which a sheet of paper is built; therefore they are watched for physical strengths that will contribute to the physical strength of the finished paper. The pulps discussed here—purified wood cellulose—are utilized as a chemical raw material from which other chemicals are produced, or they serve special purposes where their chemical characteristics are utilized. They are dissolved when they are regenerated into viscose rayon, but acetate rayon is another chemical compound. Viscose rayon and cellophane are cellulose in another form, while acetate rayon and acetate film and sheeting are something else—a compound of cellulose.

These pulps are utilized for a wide range of end products, from cellulose to coat linings, from movie film to lacquers, from sanitary napkins to photographic paper, from suitcases to men's suits. These are the pulps that are discussed here. It does not matter whether they are used for paper or for nitrocellulose, so long as they are purified to an alpha cellulose content of more than 90%.

In Table I below, prepared by Mr. Vincent, notice particularly the trend of production in the U. S. and the trend of exports. Notice also how imports have increased.

**Table I.  
U. S. STATISTICS ON PURIFIED  
WOOD CELLULOSE**

Year	Production	Net Available		
		Imports	Exports	
1938	171,650	65,220	72,800	164,070
1940	288,500	113,945	115,204	287,241
1943	369,731	129,380	22,884	476,226
1944	429,545	132,675	10,729	551,491
1945	355,820	146,030	13,030	488,820
1946	295,680	198,540	9,300	484,920
1947	408,460	248,070	14,570	641,960
1948	421,924	239,842	14,665	647,101

#### What Figures Show

These figures demonstrate, at least in U. S. production, that the full utilization of current facilities for production was being achieved during 1948, if one considers the variable facilities that can switch from paper pulp to purified pulp and for which there is no measure, says Mr. Vincent, who is an outstanding authority in these matters. The export figures show no change from 1947 and while these are expected to increase some in 1949, the tendency seems to be now to export the yarn instead of the pulp. This will probably change as the years go on and foreign facilities for making yarn are put back into production. That drop in imports for 1948 is the first decrease in these figures in many years. Those imports came from:

Canada	224,942
Sweden	9,080
Finland	3,718
Norway	2,101

In 1947 imports from Scandinavia amounted to 23,700 tons while the figures above show that for 1948 they were 14,900. These figures show that the drop in imports was all at the expense of the Scandinavian shippers. If the net available figure of 647,101 tons is raised to 650,000, it would represent a nice balance between what was required in these pulps and what the industry could produce. Surely, it represents the maximum as far as U. S. production is concerned and as far as Canadian imports are concerned, unless Canada should deny shipments to every other country. It is expected that 1949 will show lower figures in every one of these divisions, according to Mr. Vincent. This table also leads one to the conclusion that North America is very near to self sufficiency in these pulps.

In Table II he puts the figures on the basis of North America. In this table, Canadian and American production are added, exports are those made from the continent and imports are those to the U. S. only.

**Table II.  
NORTH AMERICAN PURIFIED  
WOOD PULP**

Year	Production	Net Available		
		Imports	Exports	
1946	555,000		60,000	
1947	707,000	23,700	56,000	674,700
1948	754,000	14,900	80,400	688,500

There is no need to estimate what will be available for 1949 as there will be no new facilities in operation this year so we know that at least 690,000 tons will be available if only 15,000 tons are imported into the continent. Considerably more than that is available for import, but it won't be brought in because it will not be needed. 1949 may not show the production that 1948 did, but if production is up to 1948 levels, it will only be because of heavily increased exports. While it is expected that these will increase, they will probably not go up enough to bring about a production as large as 1948.

Current capacity of North American mills can then be taken as about 760,000 tons as the top, but only on the basis that several mills now producing part paper pulp and part purified pulp do not divert more of their capacity to the purified pulp field. Within two years the Celanese mill at Prince Rupert will be operating and the capacity will be raised to 820,000 tons, but no other new facilities are being planned for Canada.

In the U. S. there has been talk of a mill in the eastern Southern section and the International Paper Co. has formally announced plans to construct a mill at Natchez, Miss., using hardwoods and with a capacity of 100,000 tons annually. If this mill goes through as planned, it would raise the capacity to 920,000 tons annually by 1952, and if the other mill is built, the capacity will approach one million tons.

There has also been talk of a third mill in the South and two mills for Alaska are being discussed. All these mills are, of course, aimed at the dissolving or purified grades. It seems a little odd, and there may be a perfectly logical explanation, but all these announcements of new mills came just at a time when it was rather obvious that the demand for purified pulps was falling to the supply level. If this trend continues, and it has so far this year, it would not be surprising if

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The Elof Hansson organization  
maintains offices in:

- Gothenburg
- London
- Sao Paulo
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- Shanghai
- Johannesburg
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and representatives in all key cities throughout the world!

This international organization serves as a magic carpet in bringing buyers and sellers of paper and woodpulp together quickly and profitably. Our intimate world-wide affiliations—branch offices and personal representatives—are your contact with all markets. As importers and exporters of paper and woodpulp, Elof Hansson, Inc. is staffed to serve you efficiently regardless of where you are located. May we tell you more about our facilities and what they can mean to you?

**ELOF HANSSON, INC.**  
220 EAST 42ND STREET NEW YORK 17, N. Y.

these plans were shelved for several years. Of the five new mills that have been talked about, only one or two have a chance of going beyond the drawing board and it is a safe bet that they will proceed slowly, says Mr. Vincent.

Thus, there is in these pulps, as in paper pulps, a change in market trend. A buyer's market is already here in these grades, although it came several months behind the market turn in paper pulps. Nearly all mills in North America, at the moment of writing, are operating at some level below their capacity and at least one has made a cut back in its production.

This turn of events has been brought about by two factors, one, a drop in the consumption of cellulose in the rayon yarn area, and two, an increased supply of cotton linter pulp. This latter has dropped in price to the point where it now sells for the same price as the acetate grade of wood pulp and it seems as though this condition will continue. If alpha cellulose contents are calculated into the price, wood pulp is now more expensive than linter pulp and this is bound to react on wood pulp prices to make them more competitive with the linter pulp. The year 1949 is apt to be a little rough on the purified wood pulps because of this linter pulp and the decreasing demand, says Mr. Vincent. This year, and maybe next year, could very easily turn out to be one of the first lags in the upward trend of the use of purified wood pulps, a growth that has been uninterrupted for ten years.

Since 1948 is deemed to have been one of those unusual peak years, it is important to know where the pulp was consumed. This is a little more important than usual because of the chances that these consumption figures will not be exceeded for several years. The balance of this study will be devoted to the consuming fields.

## RAYON

Any discussion of purified wood pulp soon becomes a discussion of the rayon yarn industry since it is the largest consumer of this type of pulp. As a matter of fact, the pulps are made for rayon and the other uses either adapt themselves to that type of pulp, or the pulps are altered very slightly to fit.

In 1948 rayon consumed 67% of the U. S. production, whereas in 1947 it used 61% of the U. S. production. In the Rayon section which follows this one the amounts of wood pulp and linter pulp used in rayon in recent years is shown. In 1948 linter pulp gained more than wood pulp and this pulp will, in all probability, show another slight gain in 1949, said Mr. Vincent.

Considerable other interesting data on rayon are shown in the next section.

Barring some new use of purified cellulose which would spring overnight into a large consumer, expected capacity for the production of purified wood pulp will meet the demands of the expected capacity for the production of rayon yarn, says Mr. Vincent. However, there is this aspect

## U. S. PRICES OF DISSOLVING WOOD PULP

Prices are per 2,000 pounds, air dry basis (10% moisture content), freight equalized for gross weight on respective Atlantic Seaboard or Gulf ports through Feb. 1947. Thereafter prices are f.o.b. producing mill, with full freight allowed to consuming plants.

	For Regular Viscose	For High Tenacity Viscose	For Acetate & Cupra Rayon
May 1938	\$ 85		
Feb. 1939	75		
Apr. 1940	80		\$100
Jul. 1940	85	\$100	100
Jul. 1943	85	100	110
Apr. 1944	95	100	110
Jan. 1946	107½	112½	117½
Nov. 1946	122	127½	138½
Feb. 1947	139	147	158
Dec. 1947	149	158	172
Mar. 1948	157	167	182
July 1948	164	174	190

(No change up to Apr. 15, 1949)

of the cellophane producers to offer cellophane at the same price, on a yardage basis, as some of the protective papers. The data in the following table will give some idea of how near they are to reaching that goal.

	Price (Mid 1948) per 1000 sq. in. (cents)
Cellophane, plain	2.1
Cellophane, coated	2.4
Acetate	3.5
Pliofilm	3.8
Lacquered glassine	2.3
Waxed glassine	1.7
Waxed sulfite	1.2

Prices in effect middle of 1948—Source: Modern Plastics.

## NITROCELLULOSE

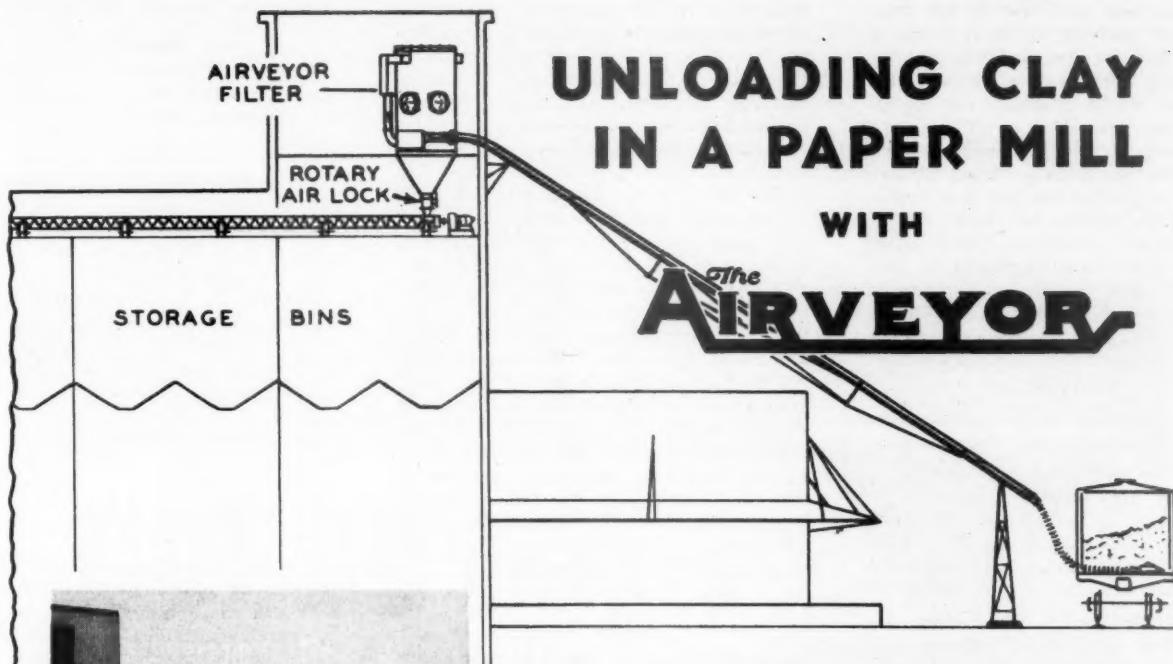
Nitrocellulose is not only the oldest of the plastics, but is the basic raw material for a variety of products ranging from movie film to lacquer and including molding powders for plastic products. Combined with camphor, as a plasticizer, it produced the first synthetic plastic, celluloid, and incidentally, this resulted from a search to find a substitute for ivory for billiard balls. All professional movie film is made from nitrocellulose because of its toughness and enduring qualities. Its lacquers are regarded as the finest of protective coatings and, of course, during the war, thousands of tons of it went into smokeless powder. Before the war, practically no wood pulp was used for this product, but today most of it is made from wood cellulose, only the plastics are of such rigid requirements that cotton linter pulp is required.

There are three major producers of nitrocellulose and one of these uses it solely for film. During 1948 about 30,000 tons of cellulose was consumed and of this total about 15,000 tons was wood pulp, Mr. Vincent estimates. There are no published statistics on this product, as is the case with many cellulose derivatives, since there must be at least five producers before the government will publish the figures. That is the reason for the word "about."

During 1948 the production of nitrocellulose fell off from the year before largely due to a decrease in the consumption of lacquer. The production of film held up as did the production of sheets, rods, and tubes. The future of wood pulp consumption in this segment depends on the production of professional film and the development of protective finishes, he predicted. Plastics from nitrocellulose are usually made from linter pulp because of the clarity demanded.

## PLASTICS and DERIVATIVES

In the business this group is known as "cellulosics" and consists of all the plastics which use cellulose as a base. Nitrocellulose has been dealt with separately so that this group consists of cellulose acetate, cellulose acetate-butyl-



## UNLOADING CLAY IN A PAPER MILL

WITH

*The*  
**AIRVEYOR**

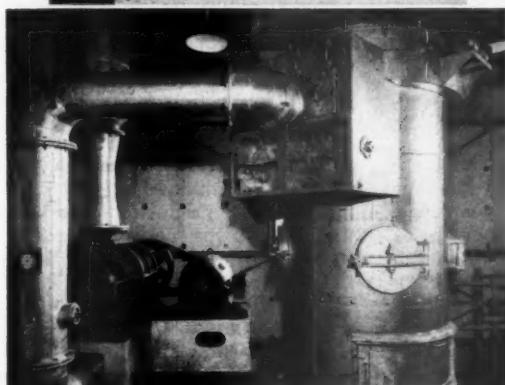
This paper manufacturer, using the Airveyor, saves the difference in price by purchasing coating clays in bulk instead of bags; also in cost of unloading and storing bagged material. Other pertinent advantages are—clean and dustless operation, rapid unloading, minimum of labor, and convenience in storing and reclaiming.

Unloading is accomplished with a flexible hose connection to the permanent conveying duct, and a portable car nozzle, when the clay is received in box cars. Material can also be unloaded from hopper-bottom cars, by using a portable twin nozzle, mounted on a skid base. This device is placed underneath the car, across and resting on the track, and attachment is made to the car hopper, through a flexible canvas connection. There is no dust or loss of material, since the slide gates are not opened until attachment is made and the Airveyor placed in operation.

The process of unloading is as follows: Clay is picked up from the car and conveyed through the permanent conveying duct up to the Airveyor filter; discharged from the filter through a Fuller Rotary Air-lock, for delivery to a screw conveyor distributing to five storage bins. Unloading rate  $7\frac{1}{2}$  tons an hour.

A second Airveyor, for handling starch, is also installed in this same plant.

It is possible you may have a material-handling problem. Why not have a Fuller engineer make a survey? Chances are we can help you, the same as we have done for many others.



**FULLER COMPANY**  
CATASAUQUA - PENNSYLVANIA

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FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS  
... ROTARY FEEDERS AND DISCHARGE GATES... ROTARY AIR COMPRESSORS  
AND VACUUM PUMPS... AIR-QUENCHING INCLINED-GRADE COOLERS... DRY  
PULVERIZED-MATERIAL COOLER... AERATION UNITS... MATERIAL-LEVEL  
INDICATORS... MOTION SAFETY SWITCH... SLURRY VALVES... SAMPLERS



rate, and ethyl cellulose. Methyl cellulose and carboxymethyl-cellulose are not used as plastic base materials. Purified wood pulp is also used as a filler in the urea-formaldehyde plastics where it forms as much as 35% of the molding powder. The quantity used in this field is rather limited and would probably not exceed 4000 tons per year.

The production of the cellulosic molding materials has been declining for two years now as production was down again in 1948. This decline has been due to rather serious competition from other materials which have increased in production. Figures for the production of two of the cellulosics are shown in the following table.

**Table III.**

*Production of Cellulose Acetate Butyrate and Cellulose Acetate Propionate  
(Figures include weight of filler and plasticizer)*

1945	73,300,000
1946	103,067,770
1947	77,446,471
1948	65,500,000

The major portion of this decline was in the molding powders, with sheets, rods and tubes remaining fairly constant. Wood pulp can be used for the production of these materials, except in the thicker sheets and the high white or translucent molding powders. During 1948 any estimate as to how much wood pulp was used for these materials is largely a guess, but it is the author's opinion that consumption was in the neighborhood of 5,000 tons.

Ethyl and methyl cellulose are using some wood pulp but here again the number of producers is too small for statistics to be available on production of the derivatives. One must fall back on his knowledge of the industry and guess as to use of wood pulp and our guess here is about 5,000 tons per year. It is the author's hope that some reader will have more accurate knowledge of these fields and communicate with him.

The youngest member of this family of derivatives is carboxymethyl cellulose which was introduced to the market in 1946. Most of this material is being made from wood pulp and the estimate of its consumption here is 2,000 tons per year. This material should have a very promising future because of the wide possibilities it offers in end use. It can be used for producing a creamy stable ice cream as well as thickening troublesome muds encountered in oil drilling. Its ability to make a jel from a dilute solution in water is almost unbelievable.

The consumption of wood pulp by this group of plastic materials and other materials has been a little disappointing. Altogether, excluding nitrocellulose, this entire group does not use over 13,000 tons.

#### MISCELLANEOUS USES

This is an extremely wide grouping, embracing everything from facial tissue to vulcanized fibre, from sanitary nap-

kins to photographic paper, and because of its variety and the shifting of the formulations within the variety, it is very difficult to evaluate as far as consumption of wood pulp is concerned, according to Mr. Vincent. For example, some of this pulp is used in the production of matrixes, but because of its cost, the producers have been endeavoring to reduce the amount used. How far have they been able to do this?

The changes in formulation of some of the papers and some of the vulcanized fiber products vary from month to month. Rayon pulp rejects, which are undoubtedly reported in the production of special chemical or dissolving grades, are being used once again in facial tissues and facial type toilet. They are also being used, to some extent, in other papers where bulk and brightness are required. Another deterrent to accurate estimates is the variation of the groupings used by various statistical gathering agencies in reporting production, but this is rapidly being corrected by the annual figures of the Census of Manufacturers. These figures in Table IV show trends:

**Table IV.**

#### PRODUCTION OF SPECIALTY PAPER AND ABSORBENT ITEMS

	San.	Vul. Imprg. Napkins Facial Matrix Fiber Stock Stock Tissue
1942	6,371	29,442 8,540 37,610 89,194
1943	5,953	32,167 24,445 39,825 83,696
1944	5,846	27,358 29,155 41,389 79,612
1945	6,019	21,703 31,017 41,467 80,333
1947	9,254	32,805 28,792 34,069 127,564

There is no significant trend in any of these figures, except in facial tissue where a decided gain was registered. This was undoubtedly the result of expansion increases which were made during 1946 and 1947. There was also a production of 48,100 tons of facial type toilet tissue in 1947.

#### EXPORTS

This is the only field that holds out hope for expansion during the year 1949, says Mr. Vincent. Every other area of use for these types of pulp is now indicating no increase or decline in consumption and there are no general business indications at present to warrant a view that these trends will be reversed this year. Two years ago it was estimated that exports might reach 90,000 tons in 1948. This, of course, refers to exports from the continent and not the U. S. alone. Actually, in 1948 exports amounted to 80,400 tons. There is every reason to believe that these exports will increase as the yarn mills in the rest of the world get back into production and arrangements are completed whereby they can sell their products in our still disordered world. North American purified wood pulp is the best in the world and from a technical point of view can compete most successfully with the Scandinavian product. It is not likely that ex-

ports from the North American continent will get as high as they were in the immediate pre-war years, but they will surely rise from the 1948 status.

#### Summary

Table V below sums up the consumption of purified wood pulp as outlined in the foregoing sections.

**Table V.**

<i>Consumption of Purified Wood Pulp</i>	1948
Total net for North America.....	688,500
Consumed in Canada.....	17,600
Increase in inventory.....	8,000
Net for U. S. Consumption.....	662,900
Viscose and Acetate Rayon.....	435,000
Balance .....	227,900
Cellophane .....	110,000
Nitrocellulose .....	15,000
Balance .....	102,900
Miscellaneous Viscose.....	4,500
Plastics .....	13,000
Special Papers .....	33,000
San. Napkins, Vul. Fiber and Misc. ....	52,400

It must be emphasized that the statistics in the table above are not uniform. Some of these are genuine as reported by various agencies, but most of them, by necessity, are Mr. Vincent's best estimate. The figures for the last three categories in the table are the most difficult to put together. There is another point to bring out and that concerns the rejects which were mentioned before. These are in the total figure of 688,500, but are difficult to track down. Also, at least 5,000 tons of this grade of pulp were transferred within the producers corporate organization.

#### British Rayon Output

The British program to expand industrial output continued apace in the rayon producing industry. According to the Board of Trade, the 1948 production of rayon and nylon filament yarn plus rayon staple and waste in the United Kingdom amounted to a new record high of 234,000,000 lbs., says Rayon Organon. This figure represented an increase of 16% over the previous year and a jump of 58% above 1937, the best prewar year.

The 1948 production was composed of 148,000,000 lbs. of rayon and nylon filament yarn and 86,000,000 lbs. of staple and waste.

#### Rayon in Mexico

Mexico now has four rayon plants, whereas just two years it had only one. That was Artisela Mexicana, in Mexico City, making about 1,000,000 lbs. viscose rayon yarn annually since 1942.

A new acetate yarn plant, Celanese Mexicana, at Ocotlan, Jalisco, is built to make over 6,000,000 lbs. A new viscose plant, Viscosa Mexicana, at Zacapu, Michoacan has capacity for over 10,000,000 lbs.

All three of these plants are affiliated with Celanese Corp. of America. The fourth plant, also Viscose process, is Celulosa Derivativa, in Monterrey, owned locally, and making 500,000 lbs. annually. It started up nearly two years ago.



# COLBY CRANES

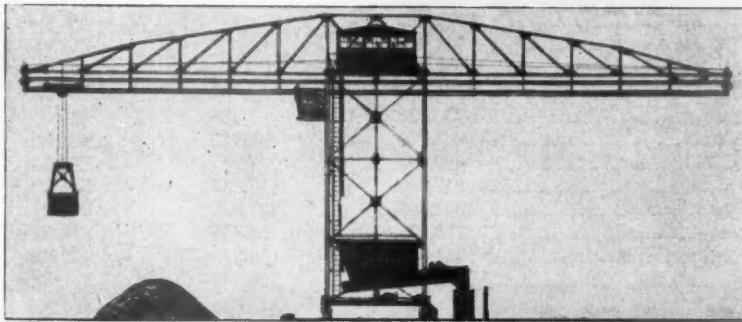
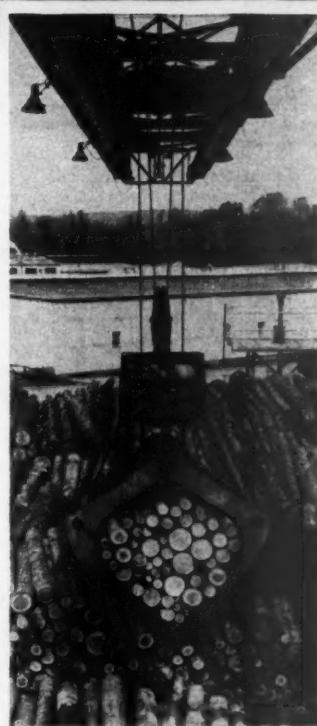
## Cut Pulpwood Handling Costs

The Colby ten-ton electric Hammerhead Crane above, in operation at a large paper and pulp mill in Southern Washington, is shown transporting 8-foot wood which arrives by truck or car, into storage and from storage to conveyors leading to grinder room. It is equipped with a grapple holding approximately one cord of 8-foot logs or slabs and has a record of outstanding performance.

The concrete beam runway is 1,000 feet long, and crane travel speed is 500 F.P.M. Radius of boom, 100 ft., covering a storage area 200 ft. wide.

Colby full revolving cranes are available in capacities from 5 to 90 tons — are designed to operate on straight or curved track. For further information on this and other Colby installations, write for folder.

At the right is engineer's drawing of the Colby double cantilever crane now being installed at a pulp plant in British Columbia. It is equipped with a 5-ton grab bucket having a capacity of 55 units/hr. for unloading chips from open barges into the 1200 cu. ft. hopper shown at the base of the crane.



## COLBY STEEL AND ENGINEERING CO.

HEAD OFFICES: 525 Central Building, Seattle 4, Washington

NEW YORK CITY  
15 Park Row

417 Market St.  
SAN FRANCISCO 5

In Canada,  
Colby Crane & Engr. Ltd. } 814 Birks Building  
VANCOUVER, B.C.

Affiliated Companies: Prescott Iron Works, American Foundry Co., Seattle



**CAPACITY  
GOING UP  
8% IN U. S.**

# Using 81% Wood Pulp

Probably the most significant fact about the rayon industry in 1949—this “year of adjustment” for many industries—is that rayon production capacity is steadily increasing all over the world.

Despite whatever may happen in other industries, there is a capacity increase projected in the United States alone of some 8% by the spring of 1950 over the operating capacity near the end of 1948.

This is a matter of greatest importance to the dissolving wood pulp industry which is expanding in the South, in British Columbia and, as now contemplated, in Alaska.

In this annual review we show in tables and charts many interesting trends in the sensational growth of rayon manufacturing. It is still a highly dynamic industry, comparable even to the television industry, for it is extremely susceptible to further sensational growth as a result of improvement of its product and discovery of new uses for rayon.

Meanwhile, the use of wood pulp as a raw material for rayon continues to increase. In the United States, wood pulp use reached a new high of 435,000 tons, as compared with 397,000 tons in 1947, only 178,000 in 1940 and 45,000 in 1930. It is far ahead of cotton linters as a raw material because of greater uniformity of product and the discovery of refinements in making the wood pulp and using it.

Wood pulp was 81% of the raw material used in the rayon industry in the U. S. in 1949, but this was a slight recession percentage wise from 83% in 1947. Cotton linters made a recovery the past year—its usage increasing from 81,000 tons to 104,500 tons. It had dropped from being 25% of total pulp in 1946 to only 17% in 1947 but in 1948 moved back to 19%.

The U. S. rayon industry exceeded the billion pound mark in production for the first time in its rather brief history. The 1948 production was 1,124,300,000 lbs., 15% above 1947 and nearly three times 1939.

For much of the data published in this section, we are indebted to the Textile Economics Bureau, Inc., of New York, which published “Rayon Organon.”

## World Rayon Production

World production of rayon filament yarn and staple in 1948 is estimated at 2,450,000,000 pounds, 23% above 1947, 10% above 1939 and only 13% below the all-time record in 1941.

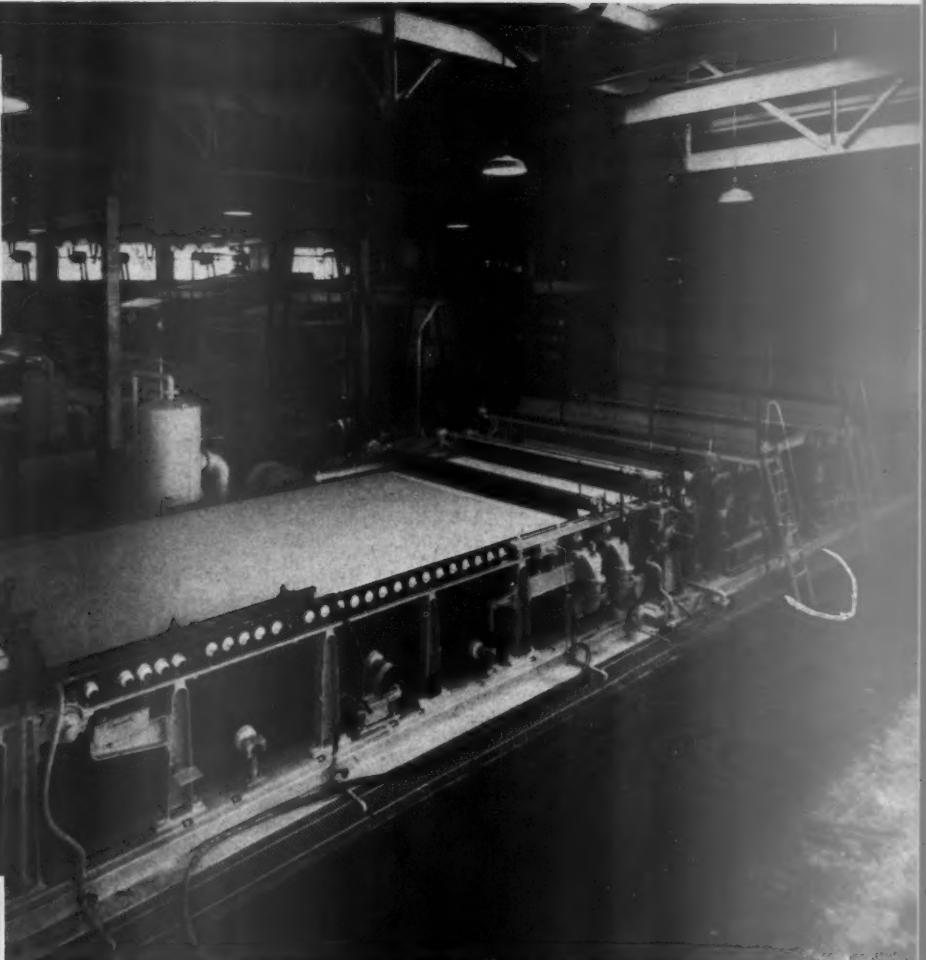
“The 1948 global production of filament rayon yarn is estimated at 1,570,000,000 pounds, a new record peak exceeding the previous high in 1947 by 20% and that

**WORLD RAYON PRODUCTION**  
Thousands of Pounds

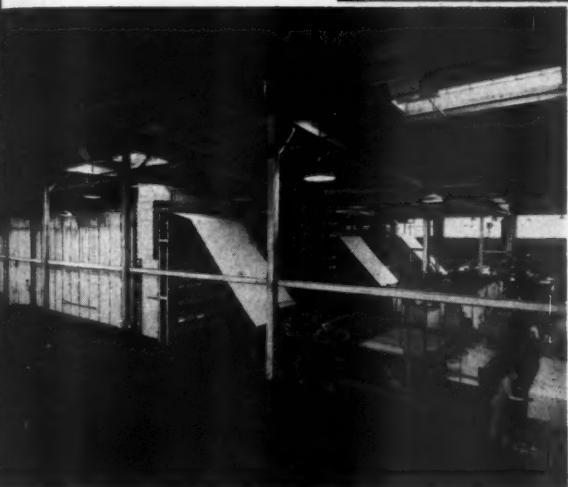
	Filament Yarn	Staple Fiber	Total Rayon
1890	30	*	30
1900	2,200	*	2,200
1905	11,100	*	11,100
1910	17,600	*	17,600
1911	18,700	*	18,700
1912	19,800	*	19,800
1913	25,195	*	25,195
1914	19,700	*	19,700
1915	18,500	*	18,500
1916	23,400	*	23,400
1917	24,200	*	24,200
1918	25,900	*	25,900
1919	27,800	*	27,800
1920	33,100	*	33,100
1921	48,200	*	48,200
1922	76,590	*	76,590
1923	102,990	*	102,990
1924	138,285	*	138,285
1925	185,290	*	185,290
1926	211,735	*	211,735
1927	295,095	*	295,095
1928	360,550	*	360,550
1929	434,215	7,185	441,400
1930	451,200	6,250	457,450
1931	499,665	7,980	507,645
1932	517,300	17,285	534,585
1933	663,395	27,895	691,290
1934	772,525	51,835	824,360
1935	941,055	139,575	1,080,630
1936	1,023,305	298,595	1,321,900
1937	1,203,105	620,955	1,824,060
1938	991,475	959,735	1,951,210
1939	1,150,425	1,149,440	2,299,865
1940	1,183,760	1,279,700	2,463,460
1941	1,267,025	1,492,080	2,759,105
1942	1,213,170	1,536,985	2,750,155
1943	1,165,885	1,467,350	2,633,325
1944	1,039,630	1,116,910	2,156,540
1945	897,000	501,000	1,398,000
1946	1,101,000	573,000	1,674,000
1947	1,311,000	680,000	1,991,000
1948	1,570,000	880,000	2,450,000

Courtesy: Rayon Organon.

FROM  
SLUSH TO SHEETS  
IN 2,600 FEET



WET END OF THE BATTERY OF THREE PULP MACHINES, AND THE DRY END OF THE MACHINES WITH SHEETS OF PULP EMERGING FROM THE DRIER.



AMERICA'S LARGEST  
PRODUCER OF UNBLEACHED  
SULPHITE PULP

CAPACITY:  
125,000 TONS ANNUALLY

*Puget Pulp* after digesting, cleaning, screening, and thickening, flows on to the Fourdrinier screens as a near-liquid . . . and comes off the machines as dry sheet pulp after traveling 2,600 feet in less than twenty minutes.

**PUGET SOUND  
PULP & TIMBER COMPANY  
BELLINGHAM • WASH.**

## CELLULOSE CONSUMPTION BY THE U. S. RAYON INDUSTRY

Short Tons of Refined Cellulose

	TOTAL PULP		WOOD PULP*		LINTERS PULP*		RAW COTTON LINTERS†
	Tons	Per Cent	Tons	Per Cent	Tons	Per Cent	Bales
1930	72,000	100	45,000	62	27,000	38	115,000
1931	84,000	100	53,000	63	31,000	37	132,000
1932	74,000	100	43,000	58	31,000	42	132,000
1933	115,000	100	65,000	57	50,000	43	213,000
1934	112,000	100	63,000	56	49,000	44	209,000
1935	137,000	100	86,000	63	51,000	37	218,000
1936	151,000	100	104,000	69	47,000	31	201,000
1937	176,000	100	132,000	75	45,000	25	187,000
1938	147,500	100	110,000	75	40,000	25	160,000
1939	194,500	100	145,000	75	53,000	25	211,000
1940	238,000	100	178,000	75	60,000	25	256,000
1941	287,500	100	214,500	75	73,000	25	312,000
1942	330,000	100	280,500	85	49,500	15	211,000
1943	336,500	100	281,000	84	55,500	16	237,000
1944	367,000	100	285,000	78	82,000	22	350,000
1945	400,000	100	297,000	74	103,000	26	438,000
1946	428,000	100	323,000	75	105,000	25	462,000
1947	478,000	100	397,000	83	81,000	17	356,000
1948	539,500	100	435,000	81	104,500	19	460,000

\*Wood and linters in purified form as used by rayon producers.

†Bales of raw cotton linters figured on the basis of one-third overweight on refined linters pulp (due to refining losses) and converted to bales on the basis of 625 pounds net weight per bale.

Source: Rayon Organon.

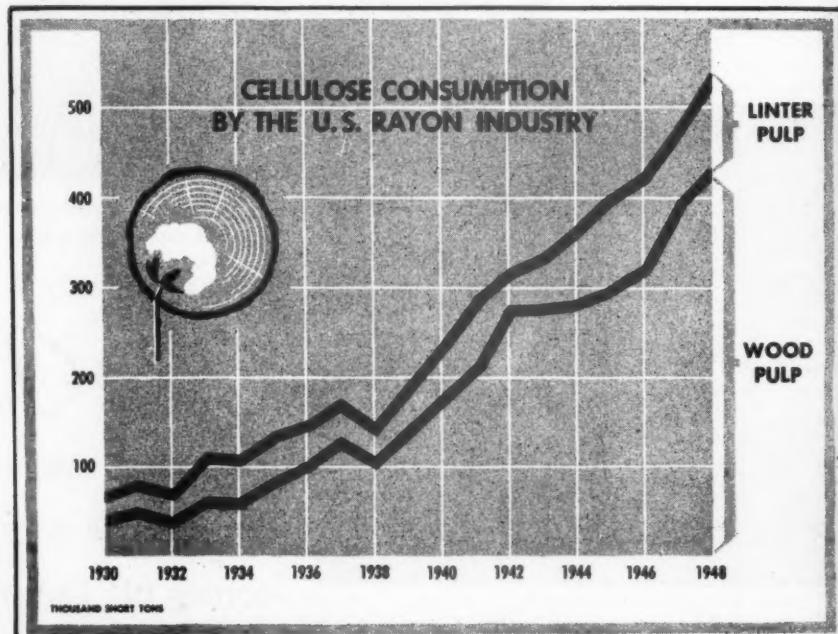
of 1939 by 37%, says Rayon Organon." This new output record was attained as the result of higher levels of operation in all major geographic areas. Led by the United Kingdom, France, Italy, Holland, Belgium and a partially-revitalized Germany, filament yarn production in Europe during 1948 rose to one of the highest levels on record. Record levels of output were also achieved by North and South American producers. Although still small by pre-war standards, Japan's 1948 output of rayon yarn rose to the highest level since 1943.

"World production of rayon staple last year is estimated at 880,000,000 pounds, a gain of 30% over 1947, but still well below the record output of 1,552,000,000 pounds in 1941. The increase in staple output was general throughout the world. Europe's output increased to the highest level since 1944 as the result of expanded operations in France, the United Kingdom, Austria, Czechoslovakia,

"In 1948 the U. S. retained its leadership in rayon production by accounting for 46% of the world's output of yarn and staple. Its position in the filament yarn field was especially commanding, accounting for 55% of the world total. Although currently the world's largest producer of rayon staple, this country does not hold the same position in this field as in filament yarn; the U. S. produced 30% of the world staple output in 1948."

### Plans for Rayon Pulp Mills

For a long time wood pulp was used mostly in viscose rayon, as it was not perfected enough for great use in the acetate field. But this field has been opening up. There will be more wood pulp for acetate rayon, as a result of the development of a new method for making



WOOD PULP IS CROWDING OUT COTTON LINTERS AS RAW MATERIAL FOR RAYON. IN 1948, 435,000 TONS OF WOOD PULP WERE USED.

Chart by Rayon Organon.

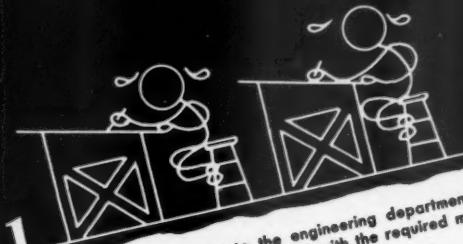
### CANADIAN RAYON PRODUCTION AND IMPORTATIONS

(1925 to 1945—In Pounds)

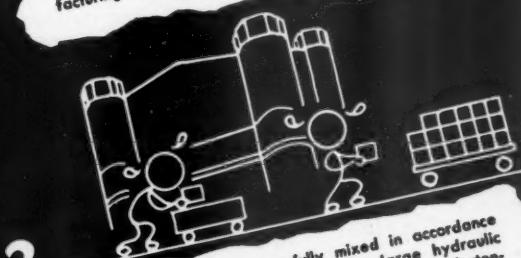
	Yarn Production	Yarn Imports	Staple Fiber Imports	Total Consumption
1925	507,528	1,851,402	.....	2,359,030
1930	4,627,327	2,383,794	.....	7,011,121
1935	13,215,617	1,214,656	.....	14,430,273
1940	19,637,869	3,482,255	4,180,609	25,574,864
1945	21,100,000	7,584,477	6,841,301	35,525,748
1947	25,421,000	5,379,949	12,507,870	44,408,819
1948	29,175,000	6,885,388	9,408,472	46,918,860

Does not include imports of military tire yarns.

# *It Takes Eight Weeks and a Lot of "Know-how"* to Build a NORTON PULPSTONE



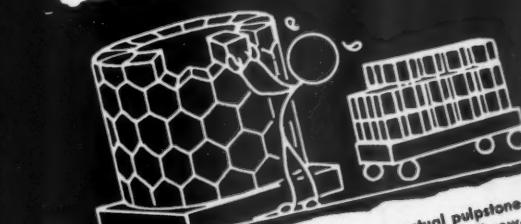
1 Your order goes first to the engineering department so that the factory can be supplied with the required manufacturing data and all necessary drawings.



2 Abrasive and bond are carefully mixed in accordance with predetermined formulas. Then in large hydraulic presses the mixture is molded into segments by the Norton-patented Controlled Structure process.



3 Next the segments go to the kilns for "firing." Scientifically loaded on cars they take a week-long trip through one of the long tunnel kilns. For about 30 hours they are in the "hot zone"—a third of this time at white heat (2200°F.).



4 Assembly of the vitrified segments into an actual pulpstone is another process that makes use of much Norton "know-how." The unique Norton center construction is a result of over twenty years' experience in building pulpstones.

It takes at least eight weeks to build a Norton Pulpstone—and build it right. One reason, of course, is that each Norton Pulpstone is "tailor-made" for its particular job. First the size must be right to fit the specific grinder for which you have ordered it (diameters range from 42" to 72", widths from 20" to 69"). Then the kind of abrasive and its grit size, the grade (hardness) of the stone and its structure (grain spacing) must all be right to produce your kind of pulp from your kind of wood.

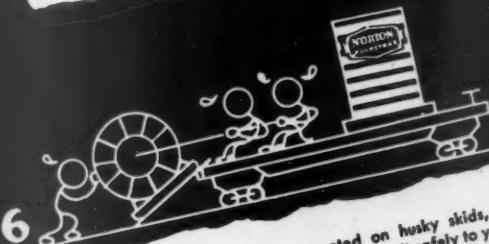
Highlighted here are just a few of the many steps in the process of building a Norton Pulpstone—each one performed carefully and thoroughly by skilled workers.

NORTON COMPANY, WORCESTER 6, MASS.

NORTON COMPANY OF CANADA LTD., HAMILTON, ONT.



5 The finished assembly is skillfully trued—a process which requires many hours—and carefully balanced for smooth running.



6 Finally the completed stone, mounted on husky skids, is crated and loaded on the car that will bring it safely to you.

NORTON ABRASIVES

rayon pulp out of Southern hardwoods by an alkaline two-stage cooking process. Probably the largest kraft digester in use will be introduced in this process.

Southern Kraft division, International Paper Co., is already going ahead with plans for such a mill to make over 300 tons per day of this pulp, at Natchez, Miss., and much equipment is already ordered.

Meanwhile Celanese Corp. of America is pushing ahead with work on its new mill at Point Edward, near Prince Rupert, B. C., with start-up capacity of 200 tons a day of high alpha sulfite pulp, but possibly later substantial increases. Much equipment is already being made to order.

In August, 1948, it was revealed that American Viscose Corp., has joined with Puget Sound Pulp & Timber Co. as main stockholders in the new Ketchikan Pulp & Paper Co., which plans a 300-ton a day bleached sulfite high alpha pulp mill at

Ward's Cove, near Ketchikan, Alaska, and that this pulp would go into Amvisco's rayon expansion.

#### Cellulose in Rayon

With 1948 rayon production in the United States at an all-time high level, it follows so that cellulose consumption by the industry broke all previous records. A total of 539,500 short tons of cellulose was consumed by the rayon plants, an increase of 13% over the previous year, composed of 435,000 short tons of dissolving wood pulp and 104,500 short tons of refined cotton linters, as previously noted. These data do not include cellulose pulp consumed in the manufacture of cellophane, plastics or other products, dealt with in another section of this North American Review Number.

"During 1948 cotton linters regained a part of the relative position which it had

lost as a source of cellulose for rayon manufacture, said Rayon Organon." Although the use of both linters pulp and wood pulp increased substantially during the year, the greater increase occurred in the case of linters. Linters pulp usage in 1948 increased 29% over the previous year compared with a 10% increase in wood pulp consumption.

"The shift in the consumption pattern for the two types of cellulose undoubtedly was strongly influenced by the price trends during the year. Thus there were two price increases for wood pulp during 1948, amounting in the aggregate to slightly more than 10%. Depending on grade, the dissolving wood pulp price in late 1948 ranged from 8.2c to 9.5c per pound. On the other hand, the linters pulp, which in 1947 had reached a figure in excess of 20c per pound, continued the drop that began during the latter part of 1947 until it hit a reported level in 1948 of approximately 10c per pound.

"The relative decline in the use of wood pulp compared with cotton linters occurred in both the viscose-cupra and the acetate divisions of the industry. The percentage of wood pulp used in viscose-cupra yarn and staple production declined slightly from 87% of total cellulose consumed in 1947 to 86% in 1948, with the use of cotton linters correspondingly increasing from 13% to 14%. Wood pulp is used almost entirely in the production of regular tenacity types of yarn and staple. The producers' practices differ, however, in the intermediate and high tenacity types, ranging from the use of 100% wood pulp to blends of linters and wood pulp, and on to 100% linters pulp.

"It requires the use of somewhat more than a pound of cellulose pulp to produce a pound of finished viscose or cuprammonium yarn (including normal waste) because both these yarns are 100% regenerated cellulose.

"The relative position of cotton linters increased more substantially in the acetate division of the industry. Thus linters pulp comprised 35% of the 1948 total cellulose used compared with 32% of the previous year; wood pulp correspondingly declined from a relative position of 68% to 65%. In the acetate process only about two-thirds of the weight of the finished yarn is cellulose, the balance being the acetyl radical."

#### Industry Capacity Survey

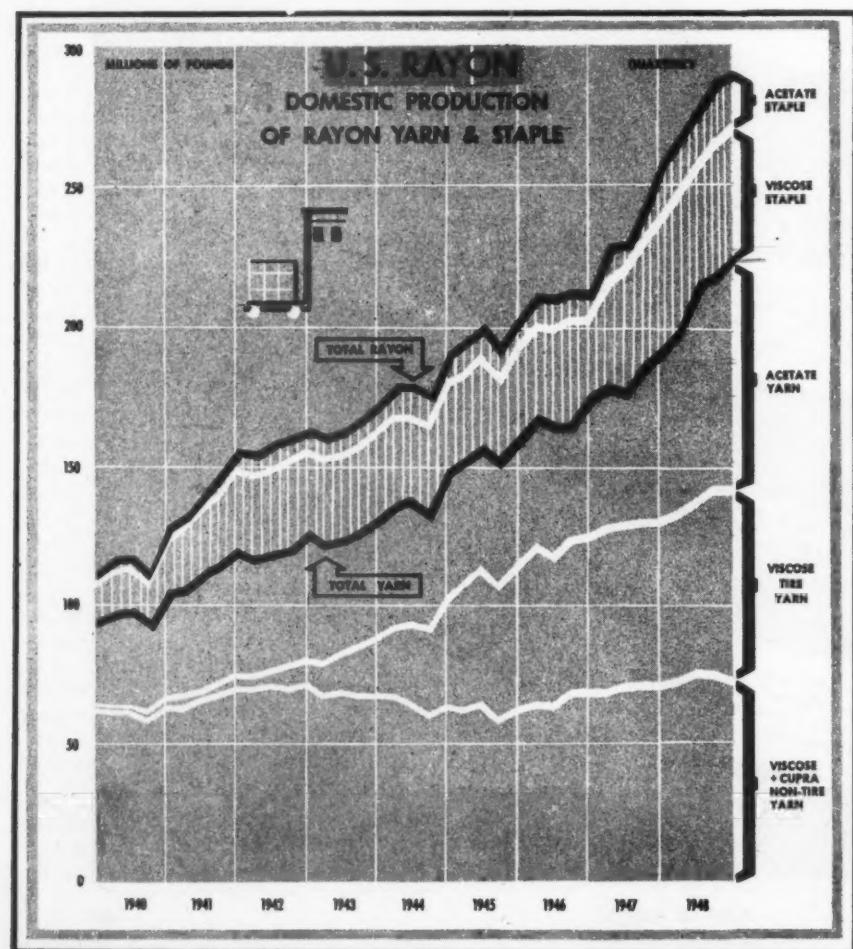
The rayon producing industry in the U. S. as we stated previously continues to expand its production capacity steadily each year and this is shown by gains made annually since 1938. A study recently completed by the Textile Economics Bureau indicates that by March, 1950, the industry's potential capacity for yarn and staple is planned to reach an annual rate of 1,254,000,000 lbs. This compares with an operating capacity rate last November of 1,162,000,000 lbs. and represents an increase of 8%.

A 1948 capacity study includes all presently operable plants and the new Beaunit Mills plant under construction at Coosa Pines, Ala. New plant projects not included in the bureau's study, because

#### U. S. RAYON STATISTICS

(in millions of lbs.)

Year	PRODUCTION			CONSUMPTION		
	Filament Yarn	Staple Fiber	Total	Filament Yarn	Staple Fiber	Total
1930	127.3	0.4	127.7	118	1	119
1939	328.6	51.3	379.9	362	96.5	458.5
1941	451.2	122.0	573.2	452.4	133.6	586
1943	501.1	162.0	663.1	494.2	162.0	656.2
1945	624.1	168.0	792.1	602.4	164.9	767.3
1946	677.5	176.4	853.9	666.5	208.3	874.8
1947	746.7	228.4	975.1	729.2	258.9	988.1
1948	856.1	268.2	1,124.3	846.7	302.3	1,149.0





## RUBBER ENGINEERED TO YOUR REQUIREMENTS

### RUBBER IS AVAILABLE IN MANY TYPES--

When using rubber as a component part of your product, or in your process, be sure that you are getting the proper type for your application.

Rubber ALONE may not be enough:

Rubber CAREFULLY CHOSEN, COMPOUNDED and ENGINEERED is the answer.

35 W. LANDER ST., SEATTLE 4, WASH.

MAin 2166





## Naturally—Vortraps were chosen

In mill after mill, for CLEAN pulp and paper you'll note the choice is—Vortraps. Popularity earned by outstanding service. Yesterday—today and tomorrow—it's Vortraps.

It is a fact that Vortraps are used in greater numbers and in more mills throughout the world than all other types of centrifugal stock cleaning equipment.

The Nichols Freeman Vortrap installation in the Weyerhaeuser Timber Company's new Kraft Pulp Mill, Longview, Washington, illustrates the simplicity of design and layout possible with Vortraps. It is to be noted that only the basic, necessary equipment for the production of clean, high grade pulp is employed.

*Vortraps are engineered and sold only by  
the Nichols Engineering & Research  
Corp. and its accredited sales representa-  
tives. Write for Bulletin No. 219-B.*

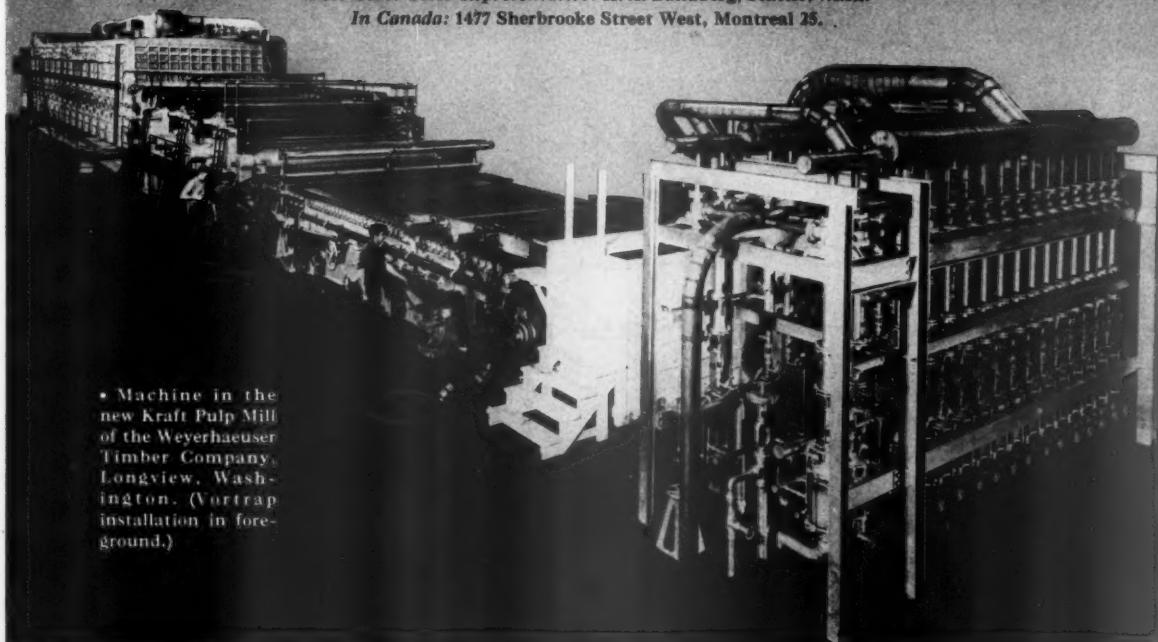
**NICHOLS**  
ENGINEERING & RESEARCH CORPORATION

70 Pine Street, New York 5, N. Y.

Pacific Coast Office: 40 So. Los Robles Avenue, Pasadena, Calif.

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• Machine in the  
new Kraft Pulp Mill  
of the Weyerhaeuser  
Timber Company,  
Longview, Wash-  
ington. (Vortrap  
installation in fore-  
ground.)



## PAPER USE AS WELL AS PULPS

### CELLULOSE ESTERS AND ETHERS USED IN PLASTICS MOLDING INDUSTRY

#### *Ethylcellulose*

Ethocel

Dow 2.310

Celcon

Nixon E. C.

Hercules E. C.

#### *Cellulose acetate*

Bakelite

Chemaco

Herculoid

Fibestos

Kodapak

Lumarith

Nixonite

Plastacele

Tenite I

#### *Cellulose acetate butyrate*

Tenite II

#### *Cellulose nitrate*

Celluloid

Hercules C. N.

Kodaloid

Nitron

Nixonoid

Pyralin

#### *Methylcellulose*

Methocel

#### *Benzylcellulose*

Hercules B. C.

#### *Cellulose Propionate*

Forticel

Dow Chemical Co., Midland, Mich.

Dow Chemical Co., Midland, Mich.

Celanese Plastics Corp., New York.

Nixon Nitration Works, Nixon, N. J.

Hercules Powder Co., Wilmington, Del.

Bakelite Corporation, New York, N. Y.

Chemaco Corporation, Berkeley Heights, N. J.

Hercules Powder Co., Wilmington, Del.

Monsanto Chemical Co., Springfield, Mass.

Eastman Kodak Inc., Rochester, N. Y.

Celanese Plastics Corporation, New York

Nixon Nitration Works, Nixon, N. J.

E. I. du Pont de Nemours & Co., Inc.

Tennessee Eastman Corporation, Kingsport, Tenn.

Tennessee Eastman Corporation, Kingsport, Tenn.

Celanese Plastics Corporation, New York, N. Y.

Hercules Powder Co., Wilmington, Del.

Eastman Kodak Inc.

Monsanto Chemical Co., Springfield, Mass.

Nixon Nitration Works, Nixon, N. J.

E. I. du Pont de Nemours & Co., Inc.

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Hercules Powder Co.

Celanese Plastics Corp., New York.

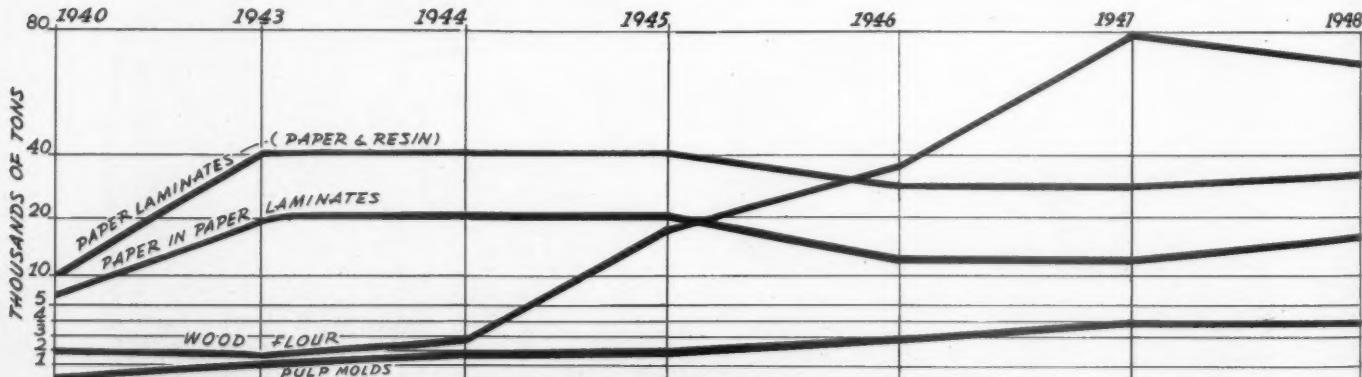
The plastics uses for paper, and also for wood pulp lignin, as well as cellulose, are interesting fields, although tonnage-wise not outstanding.

In the "Survey of Non-Paper Uses of Cellulose" it was estimated that somewhere near 30,000 tons wood pulp in North America go into nitro-cellulose, oldest of the plastics and used for lacquers, film, and molding powders, and other cellulosics. Some of the products are shown in a table on this page.

Authorities in the plywood field predict that about 25% of plywood will eventually have paper or pulp-resin "overlays," making it possible to use inferior wood veneers as inner sections. There are a variety of processes, one even using sawdust, and all produce a superior plywood. Over 35,000 tons of paper or pulp may be used.

Lignin from wood pulp has been used in products such as Howard Smith Paper Mills of Canada are making in their new Arborite plant in a western suburb of Montreal, visited by **PULP & PAPER** last year.

A. J. Norton, nationally known authority, of Seattle, has again prepared his chart for the REVIEW NUMBER, on this page, showing other plastics uses of pulp and paper.



### U. S. LAMINATES AND MOLDS PRODUCTION

ESTIMATES MADE ESPECIALLY FOR PULP & PAPER by Arthur J. Norton, consulting chemist who has been closely identified with these developments in New England, Michigan, and now on the Pacific Coast, with headquarters in Seattle. Production of paper laminates, according to his chart, has leveled off somewhat in recent years after a spurt to 40,000 tons annually in the middle 1940's. It rose again in 1948 to 35,000 tons.

The use of phenolic molding compounds with wood flour filler made a big climb from 1944 to 1947, from about 3,000 to 30,000 tons. This was due to switch to general purpose molding from war uses which required extra strength fillers such as cotton flock and cord. It tapered off in 1948 to 70,000. Pulp molding has risen steadily to 4,000 tons.

"The slowing up in these fields came sooner than I predicted," said Mr. Norton. "The present rates are about normal with a slow increase indicated in all lines in 1949. The saturation of the radio market accounted for much of the slowdown."

**"LIGHT WEIGHT  
LONG WEARING"**

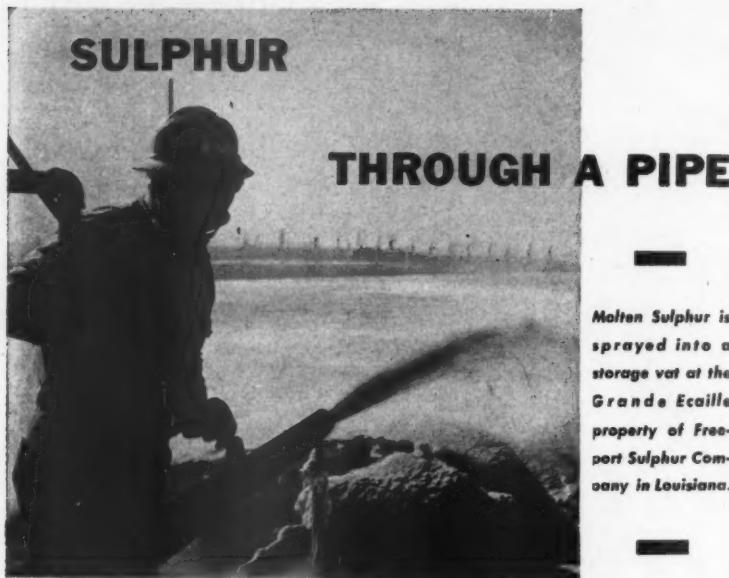
**20,000 pounds -- 9500 ends**  
of top quality, long staple  
California cotton required  
in the warp and creel of a  
typical light weight, long  
wearing Calcot dryer felt.

*Manufactured by*

**CALIFORNIA COTTON MILLS  
COMPANY  
OAKLAND, CALIFORNIA**

*Distributed by*

**Pacific Coast Supply Company  
PORTAND, OREGON  
SAN FRANCISCO, CALIFORNIA**



One of a series of Stories of Sulphur

**S**ULPHUR is mined through a pipe. On the Gulf Coast Sulphur is mined not as solid but as liquid; not by pick and shovel but by superheated water. Sulphur men use water and pipes and air pressure for tools and learn from instruments about the deposits they never see.

**H**EATED under pressure to 320 degrees Fahrenheit, the water is piped down hundreds of feet to melt the Sulphur in its underground deposit. Molten streams of yellow mineral are forced to the surface, and still glowing are poured into the storage vat to cool and harden.

**T**HOUSANDS of feet of pipe carry the compressed air, water and molten Sulphur and millions of gallons of water are used in the process. Great power plants keep pumps, compressors and boilers operating and sensitive instruments record temperature and pressure.

## FREEPORT SULPHUR COMPANY

OFFICES: 122 East 42nd Street, New York 17, New York  
MINES: Port Sulphur, Louisiana • Freeport, Texas

**SULPHUR SERVES INDUSTRY**

### Canadian Industry Continues to Grow

Rated capacity of the Canadian pulp and paper industry this year is 4,667,000 tons, an increase of 189,000 tons over the figure of a year ago. Despite drought conditions which affected eastern operations to some extent, over 150,000 tons more newsprint were produced than in 1947; 457,000 tons more than in 1946. Two high speed newsprint machines started up at Powell River, B. C. and Corner Brook, Nfd. The cumulative effect of improvements to existing plants has added 388,000 tons to the productive ability of the newsprint industry in the past three years—the equivalent of adding four new two-machine mills.

Transportation costs of the industry are estimated at more than \$130,000,000, and some \$58,000,000 was paid for chemicals; \$35,000,000 for fuel; \$26,000,000 for electric power; \$28,000,000 for food supplies. Taxes totaled \$100,000,000.

Employment totaled 51,000 in the mills, not counting woods workers.

### Finland Pays Russia

Finland delivered 53,902 tons of pulp, 33,000 of it sulfite, in reparations payments to Russia in 1948. This was 50% down from 107,104 tons of payments in 1947.

To the world Finland shipped 881,368 tons in 1948, nearly half sulfite and 26% more than 1947 when 698,108 tons were shipped.

### Furniture from Wood Pulp

A new development in the low-cost furniture field is making of furniture from wood pulp. Resin impregnated wood fiber can be utilized for this purpose according to *Armour Research Foundation*. Sheets of unbleached northern Kraft paper are used. Water is added to beaten pulp, a pre-form made in a die when dry, is impregnated with resin. The pre-form is finished under heat and pressure in a mirror polished die. A complete chair without joints can be made, designs being limited only by those capable of being pulled from a die. A chair made thus would last 100 years, according to *Armour*. Average cost of material is 25 cents a pound.

### North China Reed for Newsprint

According to recent experiments by some paper mills in China, a reed which grows in profusion in Northern China is substitute for wood paper. When mixed with about 25% chemical wood pulp, it is reportedly okay for book paper.

### Five Acres of Woods Per Person

There are nearly five acres of forest land for each man, woman and child in the United States.

# SOUNDVIEW



*High Grade*

## BLEACHED SULPHITE PULP

YES! GO WEST!  
1949 Fall Meeting TAPPI  
Portland, Oregon

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**EVERETT WASHINGTON**

## Paper Men...

There's a double profit for you in corn



### That's a fact

First off, products from corn are a big help in making better papers at lower cost. For instance, there's AMIJEL\* for the beaters and GLOBE\* Starch for the beaters and enzyme conversion . . . and CORAGUM\* for corrugating and LAM-O-DEX\* for laminating.

And then, corn is a big factor in that 25-billion-dollar farm market which buys mountains of all kinds of paper products.

Corn helps keep dollars rolling your way . . . dollars saved in production and dollars made in sales.

Consult our Technical Sales Department—without obligation—for information on the profitable use of these products.

### Corn Products Sales Company

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\*GLOBE, AMIJEL, CORAGUM and LAM-O-DEX are registered trade-marks of Corn Products Refining Company, New York, N.Y.

INCREASE ECONOMY  
REDUCE EVAPORATION COSTS  
REDUCE MAINTENANCE  
REDUCE SALT CAKE LOSSES

Even with the mounting costs of fuel and labor, many mills have found that by replacing their obsolete evaporators with Goslin-Birmingham Long Tube Multi-Effect Black Liquor Evaporators, their overall evaporation costs have been considerably reduced. These savings are being used to amortize the cost of this new, modern equipment.

Such an installation is the G-B Sextuple Effect Evaporator at the Crown-Zellerbach Corporation's Port Townsend plant, one view of which is shown above.

If such a program of modernization is indicated in your plant, write, wire or call and have one of our engineers immediately available for consultation—without obligation. Literature is available on request.

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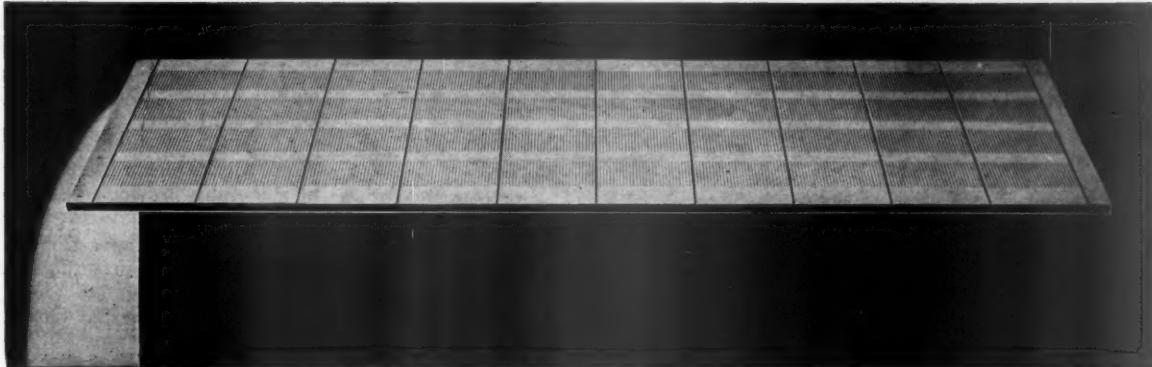
**FEEDOWEIGHT**



For feeding SALT CAKE and LIME at predetermined rate by weight.

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SCREEN PLATE*  
OVER 20,000 IN SERVICE

No slot wear in twelve years! The important sharp top edge and burnished cut remains unaffected by erosion and corrosion. AND DO THEY SCREEN!

**MAGNUS METAL CORPORATION**

YES! GO WEST! 1949 Fall Meeting TAPPI, Portland, Ore.

**FITCHBURG, MASS.**

#### **EXPANSION (Cont. from p. 64)**

announced. There is also talk of a new pulp mill going in near the Arrow Lakes in the interior of British Columbia.

From the standpoint of projects completed, most notable in British Columbia was the installation of Powell River Co's new high-speed 226-inch No. 8 newsprint machine, putting that mill definitely in the 1,000-ton a day category.

As this is written, at least two newsprint mills are being projected in Canada, although final authorization has not been given. Costs of construction, double what they were ten or 20 years ago, have been a discouraging factor and another deterrent has been the fact that some mills have been able to make more effective use of existing plants.

#### **Several New Mills Planned**

Several new pulp and paper mills are being projected and a few of them will at

least reach the blueprint stage before the end of the year. On the Pacific coast: in addition to Canadian Western Lumber Co.'s proposed mill, the Bowater group may also locate on the coast or along the line of the Pacific Great Eastern Railway in central British Columbia; it has had its representatives making investigations and Premier Byron Johnson conferred in London with President Sir Eric Bowater recently. There is also talk of a pulp mill in the Arrow Lakes district.

Two independent groups are working on pulp and paper projects in Alberta—Alberta Pulp Mills, representing the Hough interests, planning a bleached kraft pulp and board operation near Red Deer, and R. O. Sweezey of Montreal seeking pulpwood licenses as a preliminary to launching a pulp or newsprint mill at Edmonton or near Calgary, possibly using natural gas for fuel.

The province of Saskatchewan, with

suitable pulpwood resources in the north and abundant deposits of sodium sulfate, has been endeavoring to attract the pulp and paper industry. Ontario, with a major expansion era drawing to a close, may see the initiation of a pulp mill on Blind River near Georgian Bay, backed by the Hugh Mackay group, although fire destroyed some of the timber on which they were depending.

The year witnessed no further progress in connection with the proposed 1,000-ton newsprint mill for Lepreau, N. B., on the Bay of Fundy, but its promoters were still active.

Engineers for Abitibi Power & Paper Co. have been making a hydro-electric survey in the Prince Albert district of Saskatchewan, leading to speculation that this organization may plan a pulp mill there. Fort a la Corne, 40 miles east of Prince Albert, is said to be favored.

An indication of the industry's overall expansion in Canada was given in matter-of-fact statistics showing that estimated production in Canada increased by 260,000 tons and the gross value of pulp and paper production increased by nearly \$100,000,000 in 1948. In other words, while value of production might have been influenced by rising prices in some instances, there was an absolute gain in productivity through expansion in capacity and efficiency.

#### **Pacific Coast Expansion**

On the Pacific coast, every company engaged in the industry was either building or putting in new machinery in 1948.

At Victoria, Sidney Roofing & Paper Co. established a new waste paper pulping and stock-storage plant and modernized its No. 2 paper machine; also installed a new 60,000-lb. per hour steam generating plant.

At New Westminster, Westminster Paper Co., which installed a new Beloit machine the previous year, got its new groundwood mill into production.

B. C. Pulp & Paper Co. is continuing the improvement program which it initiated two years ago at its mills at Woodfibre and Port Alice. At Woodfibre, additions are a new Babcock & Wilcox power plant, Sumner-Bellingham hydraulic barker, and a Nyman Swenson acid tower. At Port Alice a new Combustion Engineering boiler is being installed.

Powell River Co. concentrated on getting its new newsprint machine into operation, but the company also extended its groundwood operations.

Powell River Co. installed additional pocket grinders and washers designed by Pulp Bleaching Co. and built by Waterous, Ltd., Jonsson knotters, and three new Cowan screens to increase capacity. The sulfite mill was completed and a new high-yield news grade system installed. Sherbrooke Machineries washers were put in the sales sulfite screen room and two Sutherland refiners in the news grade system.

The Nanaimo Sulfate mill, whose main buildings are now under construction  
(Continued on page 180)

## **BROWN-HUTCHINSON PREFABRICATES PROTECTION**

### **AGAINST**

**Costly Recurring Replacements**

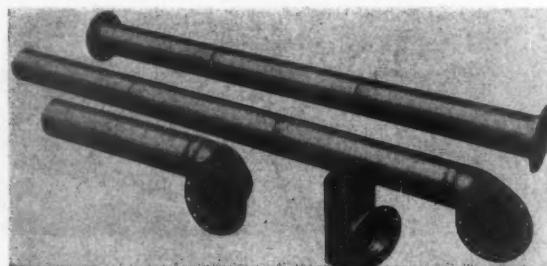
**Costly Shutdowns for Coating and Cleaning**

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Typical Prefabricated Units of pipe made of 14 gauge, No. 35 Satin finish Monel. Flanges are  $\frac{1}{4}$ " Monel.



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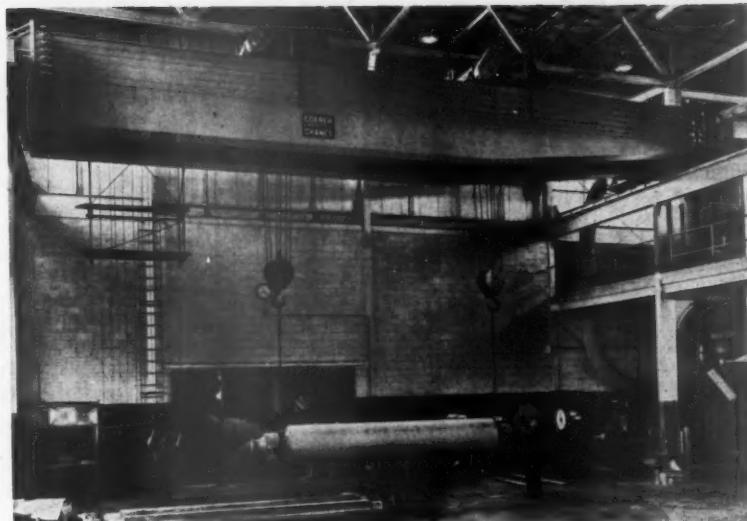
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One of the Five Ederer-designed and custom-built cranes in the recently completed paper and new wood preparation plant of the St. Regis Paper Company, Tacoma, Washington, is a "half crane." Its present span of 49' 8" has been so designed that it can be extended to 75'—retaining its 24 ton capacity—when the machine-room, where it is installed, is widened according to future plan. This is typical of custom-building for specific job requirements, done every day by Ederer. The same thing can be done for your plant . . . an Ederer engineer will be glad to discuss it with you.



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 METALS**

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"THEY'RE ANALYZED"

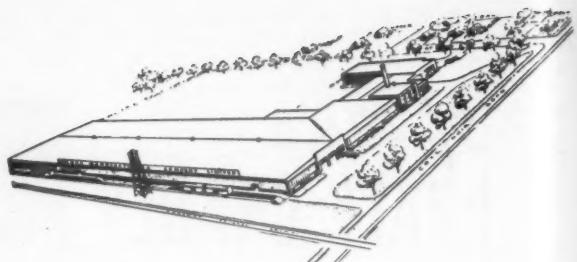
## EXPANSION (Cont. from p. 178)

under a general contract to B. C. Bridge & Dredging Co., will cost about \$16,000,000, according to present estimates, and it will be ready for operation by the late summer of 1950, producing about 200 tons of bleached sulfate pulp initially.

Combustion Engineering and Vancouver Iron Works are supplying the heat recovery unit at Nanaimo; John Inglis Co. will build the Fourdrinier, the slice and press sections, also the evaporator and four digesters, the latter according to A. O. Smith patents. Sherbrooke Machineries will provide washers and Paper Machinery Ltd. the Flakt dryer.

Most major contracts for Columbia Cellulose Co. at Port Edward are yet to be awarded, but the wood room setup has been pretty well determined, and Canadian Sumner Iron Works will supply the

ARTIST'S SKETCH of Nanaimo Sulfate Pulp Co., now being built at Nanaimo, B. C., by MacMillan Export Co., one of Canada's biggest timber firms. Contracts listed on this page.



hydraulic barker and chipper.

Major projects carried out at the Ocean Falls mill of Pacific Mills, Ltd., consisted of installation of four new 3½-ton digesters built by Vancouver Iron Works and a B & W boiler whose peak capacity potential is 200,000 lbs. an hour, two new turbo-generators, new Swenson-Nyman washers, all of which increased kraft pulp to 175 tons daily.

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advantages*

## THE "STOCK-MAKER" IS A FIBER-BEATER

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## Eastern Additions

Extensive plant rehabilitations and addition were carried out at the Mont Rolland and St. Jerome mills of Rolland Paper Co. in Quebec.

Brompton Pulp & Paper Co. continued its program of rounding out its new operation at Red Rock on Lake Superior which has cost the company a total of more than \$9,000,000. Installation of new equipment during the past year boosted production from 51,705 tons to 67,408 tons.

Townsite improvements, principally, were made at another new Lake Superior mill—that of Marathon Paper Mills of Canada at Marathon, which first went into production a couple of years ago.

Howard Smith Paper Mills is engaged in an expansion program involving \$10,000,000, including the following: At Beauharnois division, extension to finishing room and new steam boiler installation; at Cornwall, soda pulp improvements, new liquor recovery furnace, water filter expansion, and foundation for a new beater room and pulp storage; at Crabtree Mills, a Hydrapulper, stock refiner and machine room additions.

Most expansion carried out by Mersey Paper Co. whose newsprint mill is located at Brooklyn, Nova Scotia, was in connection with timber purchases.

As a result of mill modernization of Great Lakes Paper Co., at Fort William, Ont., production will be stepped up from 20,000 tons of newsprint to 25,000 tons. The Great Lakes company constructed a new 10,000 ton sulfite pulp digester for Rhinelander Paper Co.

Hinde & Dauch Paper Co., with plants in Toronto, Trenton and Montreal, is building a new plant at Chatham, Ont. At Dryden Paper Co. in Dryden, Ont., the program during the 1947-49 period calls for expenditure of about \$1,255,000. Last year a new 60-ton paper machine started up.

Improvements were effected at the Thorold, Ont., mill of Ontario Paper Co. A double box suction couch was installed on No. 2 machine at the same time as a new headbox and additional Bird screen. Speeds were increased from 1140 feet to 1200 f. p. m. without loss of efficiency. On No. 4 machine, which has a wire width of 160 inches, the same type of couch as on No. 2 was installed, together with new headbox and additional Bird screen. Changes were also made in connection with No. 5 160-inch machine, including installation of a new couch and double

(Continued on page 182)

# C. C. MOORE & CO. ENGINEERS



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Steam, plant equipment for industrial concerns

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COCHRANE CORPORATION

DIAMOND POWER SPECIALTY CORPORATION

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### POWELL RIVER DEVELOPMENT PROGRAM

#### BLOEDEL, STEWART & WELCH, LTD.'s

Sulphate Pulp Mill at Alberni

*are completing*

#### H. R. MacMILLAN EXPORT CO., LTD.'s

Sulphate Pulp Mill at Nanaimo

*and are preparing the site for*

#### COLUMBIA CELLULOSE CO.

*For faster . . . more efficient . . . more economical  
work on your pulp or paper mill.*

**BRITISH COLUMBIA  
BRIDGE & DREDGING**  
CO. LTD.  
544 HOWE STREET VANCOUVER B.C.

#### EXPANSION (Cont. from p. 180)

suction boxes and a complete new Fourdrinier.

Brown Corp., La Tuque, Que., has spent about \$2,000,000 authorized last year, in addition to previous outlays which included installation of a new pulp dryer and other improvements.

One of the busiest companies in Canada has been Fraser Companies engaged in building a new unbleached sulfate mill at Newcastle and which built a bleach plant at Edmundston.

Improvements were carried out at nearly all the Canadian International Paper Co. mills.

Abitibi Power & Paper Co., another organization operating a group of mills, made important changes. Its Thunder Bay grinder room at Port Arthur was rebuilt and five lines of Waterous grinders

installed. The Beaupre mill went into production of unbleached sulfite and at Smooth Rock Falls a new caustic extraction plant went into operation. The Port Arthur mill of Provincial Paper Co. started making the first machine coated paper in Canada. The board machine at Iroquois Falls was modernized and a new groundwood mill and woodroom were built there.

Gulf Pulp & Paper Co. at Clarke City, Que., plans to spend \$1,000,000 on new machinery if the Quebec government can be persuaded that the development will not increase the drain on the province's pulpwood.

The E. B. Eddy Co. at Hull, Que., has a new bleach plant coming into production this spring.

The KVP Co. at Espanola, Ont., brought its modern lime slaking and bleached

liquor making plant into production, providing the bleach liquor necessary for the plant's bleaching operation. Turpentine recovery equipment was also installed on all the digesters as well as a system for decanting the crude oil. Additional grinding capacity was installed in the wood room.

#### ALASKA

Every year the introduction of a pulp industry into Alaska comes closer to realization. Eventually there will be one in the Tongass National Forest, the extensive timberlands covering virtually all of Southeast Alaska and held by the U. S. Forest Service.

In the past year, the new Ketchikan Pulp & Paper Co. of Seattle was organized by Puget Sound Pulp & Timber Co. and American Viscose Corp., and paid down \$100,000 on a pulpwood unit in the Ketchikan area auctioned by the government. And it has spent many thousands more in investigations and preparations for a high alpha sulfite pulp mill at Ward's Cove.

However, no contracts had been let as this issue went to press but some preliminary work was expected to start this summer. A mill starting at 300 tons capacity is planned, making bleached pulp to be entirely absorbed by Amvisco in its rayon expansion. A rampant Alaska legislature which suddenly became a taxing body with a vengeance, laying heavy taxes upon the fisheries and other industries, threw a scare into industrial interest in the territory. But it made exceptions of new industries, such as pulp would be.

Juneau and Sitka are still talked of as other possible sites for mills, but no tangible developments had taken place along this line.

#### EXPANSION IN MEXICO

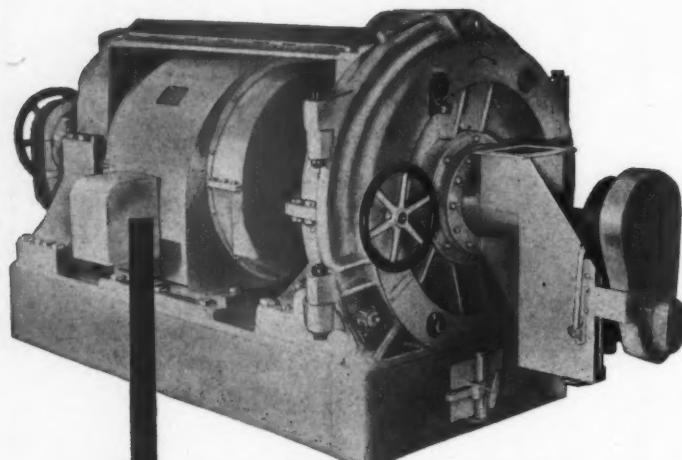
Important units in the sensational expansion of the Mexican pulp and paper industry of the past few years were still being carried through to completion in 1949, although at a slower pace because of the devalued peso and increased difficulty of purchasing equipment from the U. S.

Nine new mills in Mexico—completed or a-building—were visited by **PULP & PAPER** in 1948 in a Mexican tour which took in virtually all the operations in that country.

Still ahead is completion of the entirely new fine paper mill being built by the Lenz family at the site of their present Loreto mill in the Villa Obregon suburb of Mexico City. The new mill will be on one side of the homes of 82-year-old German-born Don Alberto Lenz and his son, Hans, the old mill on the other. A modern 134-in. 27-ton Rice Barton machine goes in the new mill. The Lenzes now operate two paper machines in the groundwood mill at Loreto and three in their kraft mill a few miles away at Pena Pobre.

The Lenzes are perfectionists, their mills being as clean and efficient as any

(Continued on page 184)



A PULP REFINER . . . by Sprout-Waldron—is your assurance of higher tonnage per unit, together with lower power consumption.

Rugged and precision-built, a Sprout-Waldron Refiner weighs over 15,000 lb. Yet, required installation space is only 10'3 1/4" x 4'9 1/2" x 5'2 1/2".

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Wherever wood pulp refining is a vital operation—from defibrizing semi-chemical to hydrating fully cooked pulps—consider Sprout-Waldron Refiners.

Other Sprout-Waldron machines in the Pulp and Paper Mill Industry are:

- (1) Double Agitated Mixers—designed especially for efficient and economical pulp blending.
- (2) Rotary Knife Cutters—engineered for the reduction of asphaltated papers, cooked flax, bark, etc.
- (3) Attrition Mills—outstanding for defibrizing rags and intimate blending.

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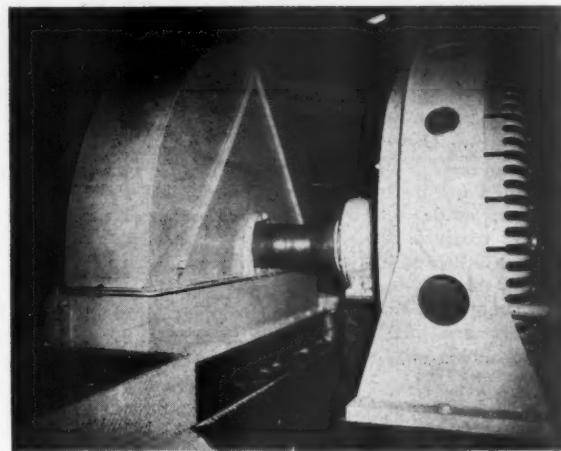


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## CARTHAGE

10 - KNIFE

## CHIPPERS



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Logs and small wood pieces are held to the center of the disc where knives are close together and a *continuous knife pressure* is applied, resulting in a smooth flow of *more uniform chips* that *pack better* in the digesters and give *higher yield* at lower maintenance cost.

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in 16 months  
from  
the word  
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Look for this same profitable speed in your own plans for expansion, modernization and installation of a complete new mill.

EBASCO designs buildings and equipment, purchases all components, erects and installs everything. We deliver to you a paper machine in operation.

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Purchasing - Rates & Pricing - Research - Sales & Marketing  
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### EXPANSION (Cont. from p. 182)

in America and they are reminders of some of the best New England mills. So if they have moved slowly at Loreto, they are nevertheless building well.

At Tlalnepantla, the new industrial city eight miles north of Mexico City, where new Westinghouse, steel, glass and other plants are being built, are the virtually completed paper and boards mills built by new companies headed by Jose de la Macorra, Jr., who is also general manager of the San Rafael company, Mexico's biggest paper industry with mills at San Rafael and Progreso. At Tlalnepantla, trial runs have been made on two-machine cigarette and fine paper mill with a flax cellulose plant serving it, and the adjacent board mill also was near completion. Engineering-wise, these mills are ultra-modern and comparable to almost any in North America.

Other new mills in Mexico have previously been reported in **PULP & PAPER** as the result of its editorial tour. Cartonera Moderna, headed by Don Felix Ribot, was loaned to its new plant in north Mexico City near the new Fenix Paper Co. The big San Rafael mill started up its new modern Pusey & Jones 50-ton capacity Yankee and was completing its new kraft mill.

The Cuauhtemoc Brewery of Monterrey, biggest brewery in North America after Budweiser, started a new kraft pulp mill to serve its board mill. Another new paper mill at Monterrey, engineered and supplied by Sandy Hill Iron & Brass Works for the Garza Brothers lumber firm, was being completed.

The first market pulp mill south of the Rio Grande, the \$10,000,000 plus Compania Industrial de Atenquique, possibly the only mill in the world operating entirely on virgin timber, completed its second year of operation. Now owned by the government and with Americans in key positions, headed by Stanley Wilkes, mill manager, it has made up to 148 tons of pine kraft pulp and board, mixed, in a day but its 136-inch Black-Clawson is rated at 80 tons. A visit to this mill in Jalisco province west of Guadalajara was described in the May, 1948, **PULP & PAPER**.

### U. S. A. Exports of Pulp and Paper Mill Machinery to Latin America

	Year 1941	Year 1946	1947 Jan.-July
Argentina	\$6,000	\$35,000	\$72,000
Brazil	268,000	646,000	481,000
Chile	39,000	126,000	106,000
Cuba	8,000	96,000	43,000
Mexico	251,000	966,000	911,000
Peru	76,000	11,000	13,000
Uruguay	1,000	4,000	6,000
Venezuela	2,000	37,000	27,000
Total	\$651,000	\$1,921,000	\$1,659,000
Other Totals:	1942-\$772,000;	1943-\$816,000;	
	1944-\$468,000;	1945-\$1,223,000.	

Source: Unasylva, published by FAO of United Nations.

United Shoe & Leather Co. is building up its three-year-old paper division in Mexico under Mitchell Thom, former Canadian superintendent. The Coyoacan mill has had its third machine operating since 1943 but tabled plans for a fourth. At Cuernavaca a new little mill is in its second year and at Puebla another is in its third.

Total pulp production in Mexico which was only 27,000 tons in 1946 is heading for an ultimate goal of close to 150,000. In paper, production of 139,000 tons in 1947, is climbing toward 240,000 tons.

There are now four rayon plants in Mexico where there was just one two years ago, using mainly North American wood pulp. Celanese has built new ones at Ocotlan, Jalisco, and at Zacapu, Michoacan, adding to the one they have had in Mexico City. Another new one started up in Monterrey.

### India to Spend \$17,000,000 In U. S. on Mill Machinery

India will spend about \$17,000,000 in the U. S. for paper and pulp mill machinery in 1949, 1950 and 1951 in a vast program of industrialization, which should make that country America's best customer less than two years after gaining its independence. India's total expenditures in the United States during the three-year period will total about a half billion dollars, mostly for capital goods.

This information was contained in a study prepared for the Times of India by the Ramji Ram Saksena, from Indian counsel general in New York.

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